JANUARY | 1958

products finishing

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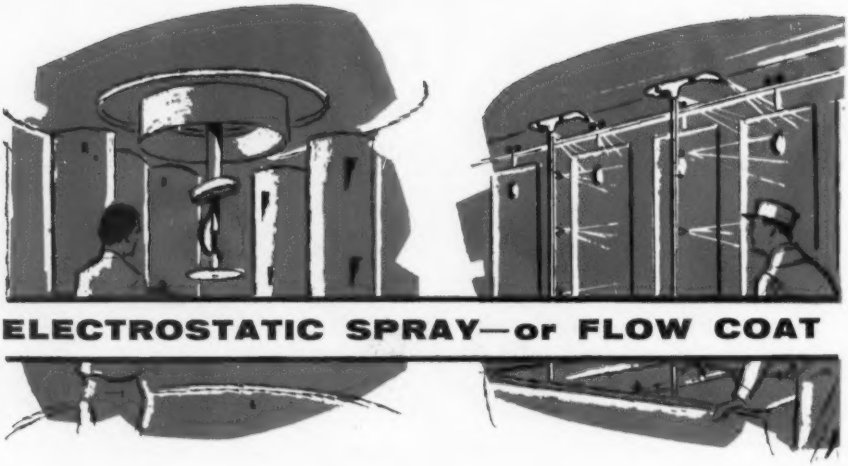

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1	17	33	49	65	81	97	113	129	145	301-2nd Cov.	330	346	362	378	394	410	426	442
2	18	34	50	66	82	98	114	130	146	302-3rd Cov.	331	347	363	379	395	411	427	443
3	19	35	51	67	83	99	115	131	147	303-4th Cov.	332	348	364	380	396	412	428	444
4	20	36	52	68	84	100	116	132	148	304	317	333	349	365	381	397	413	429	445
5	21	37	53	69	85	101	117	133	149	305	318	334	350	366	382	398	414	430	446
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11	27	43	59	75	91	107	123	139	155	311	324	340	356	372	388	404	420	436	452
12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
16	32	48	64	80	96	112	128	144	160	316	329	345	361	377	393	409	425	441	457

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2	18	34	50	66	82	98	114	130	146	302-3rd Cov.	331	347	363	379	395	411	427	443
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5	21	37	53	69	85	101	117	133	149	305	318	334	350	366	382	398	414	430	446
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7	23	39	55	71	87	103	119	135	151	307	320	336	352	368	384	400	416	432	448
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13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
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15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
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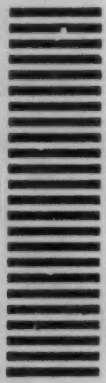

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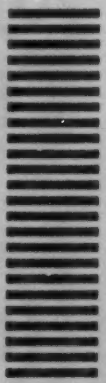

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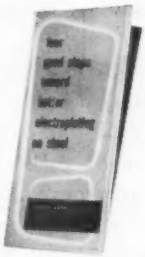
What causes hydrogen embrittlement during electrocleaning? What is the remedy?
See pages 15 and 16.



Do you need a brass cleaner that gives better protection against tarnishing?

Oakite has a new brass cleaner that provides scientific protection against the oxygen that tarnishes brass and other copper alloys during the application of reverse current.

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Unequalled barrel finishing ...with 4 different TUMBLEX* abrasives

The long experience of Norton engineers has brought the value-adding, cost-cutting "Touch of Gold" to barrel finishing. To you, this means prompt aid in solving finishing problems. Just send sample parts, ranging from tiny needles to hefty forgings, to the Norton Sample Processing Department. You'll get helpful recommendations as to the type and size of Tumblex material to use plus other data on the equipment and methods you need most. **Write to Norton Company, Worcester 6, Mass.** for a copy of the newly revised handbook on barrel finishing. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone book, yellow pages. Behr-Manning Company, Troy, N. Y., division of Norton Company. *Export:* Norton Behr - Manning Overseas Incorporated, Worcester 6, Mass.

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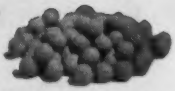

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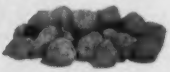
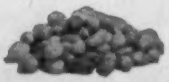
ALUNDUM Tumblex "T". Bonded, triangular shape, and fast cutting for special shaped parts. Triangular form prevents wedging in work slots or holes. Available in four sizes.



ALUNDUM Tumblex "A". The workhorse for general barrel finishing. Performs several operations at once, removing flash, scale, tool marks and burrs, while forming radii and finishes to required microinch. Made in eleven sizes.



Tumblex "N". Natural stones, offered exclusively by Norton, for high lustre, especially on die castings and soft metal. Rounded uniform shape brings out the most desirable color of finished parts. In seven sizes.

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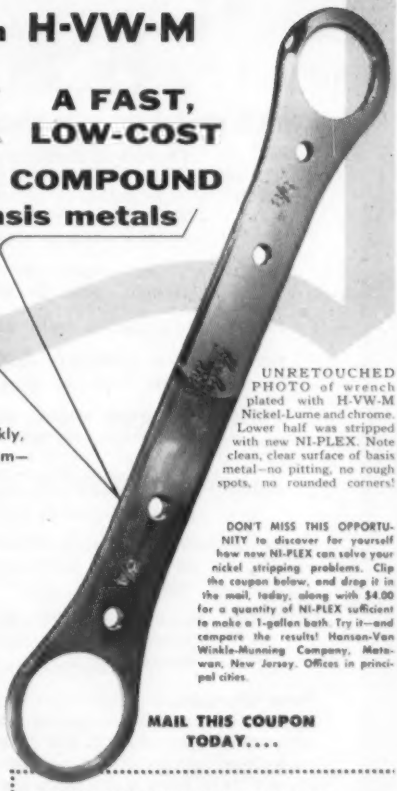
NI-PLEX A FAST, LOW-COST NICKEL STRIPPING COMPOUND that's EASY on basis metals



UNRETOUCHED PHOTO of wrench plated with H-VW-M Nickel-Lume and chrome. Lower half was stripped with new NI-PLEX. Note clean, clear surface of basis metal—no pitting, no rough spots, no rounded corners!

Just one NI-PLEX bath strips nickel or cadmium quickly, completely from steel, copper, brass, silver or aluminum—without injuring the basis metal!

NO CYANIDES, CAUSTICS, ACIDS OR CURRENT . . . and no noxious fumes! New Ni-Plex won't cause corrosion or pitting . . . tests prove it's the *only* effective nickel stripper that's safe for parts containing two or more basic metals.

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☐ **ENSTRIP "A"** — a fully-prepared alkaline mixture already containing sodium cyanide, used for the same purpose as Enstrip "S".

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☐ **ENSTRIP "T-L"** — a fast-acting, dry alkaline stripper for dissolving tin, lead, solder alloys, tin-zinc alloys and zinc from steel base metals.

☐ **ENSTRIP 165S** — a neutral dry-additive for acid solutions for quick removal of nickel, tin, lead, zinc, cadmium, iron and aluminum from copper and copper base alloys.

☐ **ENSTRIP L-88** — a completely prepared acid electrolytic stripper for removing copper, nickel, chromium, brass, bronze, iron and white brass from zinc-base die castings.

These eight outstanding strippers are "stock" items in the Enthone line of chemicals for the metal finishing and electroplating industries. In most cases, one of the "Enstrips" will prove to be the answer to your problem. On the other hand, special developments are available from Enthone to meet requirements not covered by the Enstrips featured above. Write us, outlining your needs, and include a sample of your product, if possible. We'll be glad to recommend the best stripping method possible.

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products finishing

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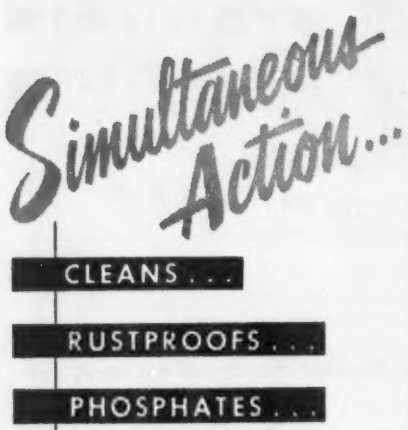

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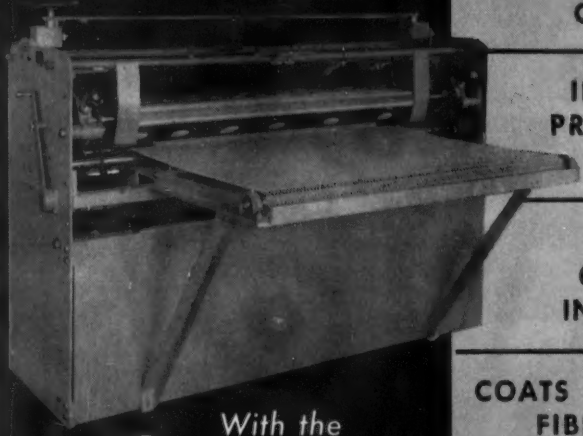

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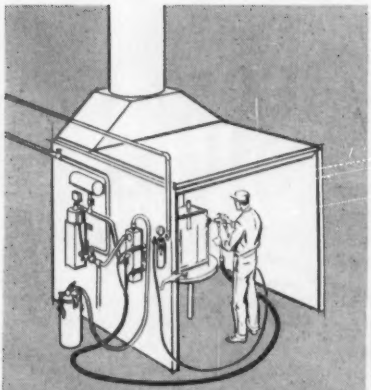

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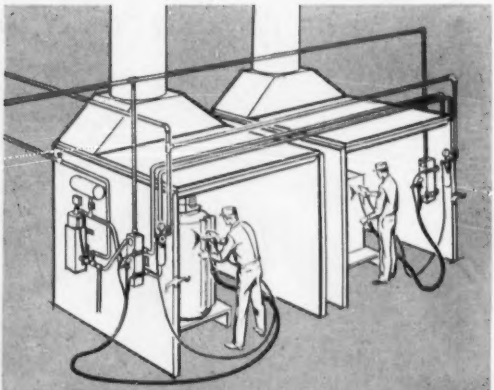

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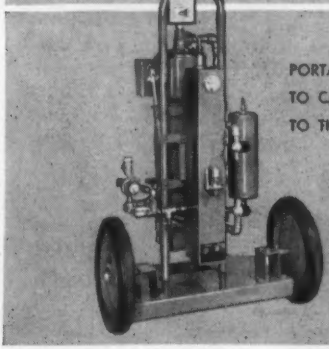

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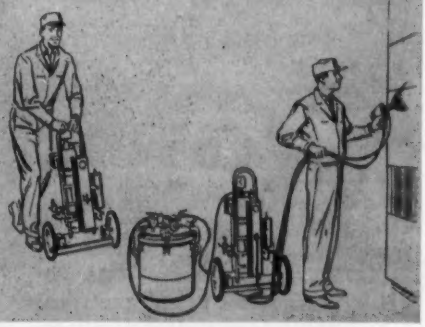

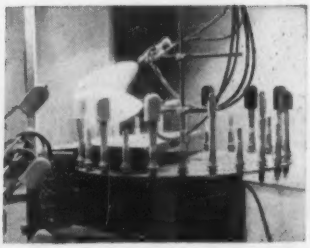

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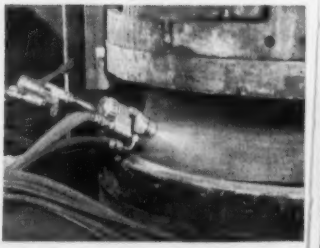

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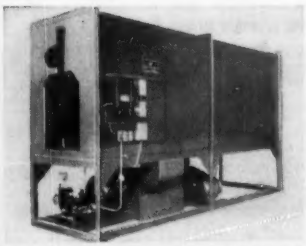

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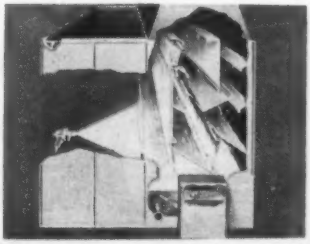

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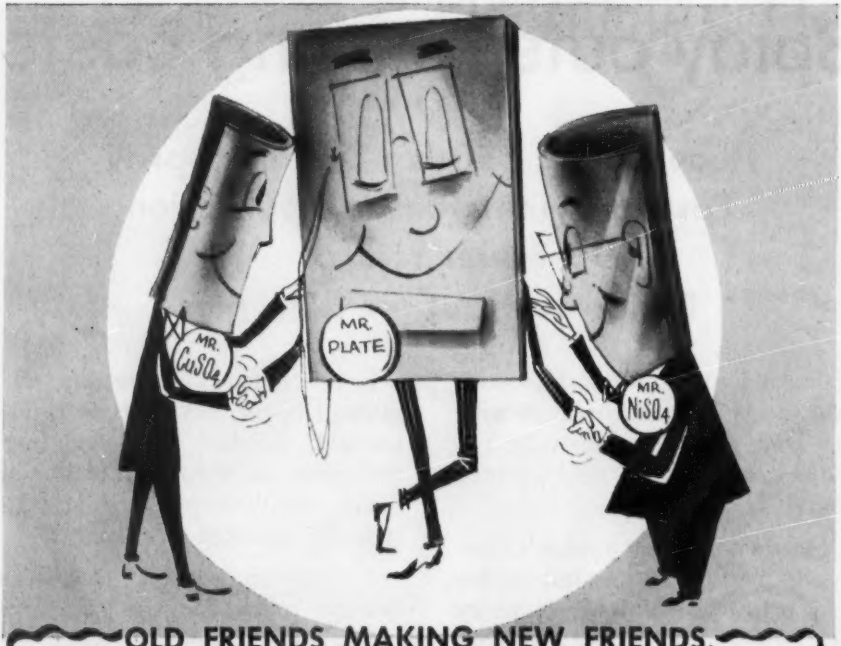

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Only Delpark offers filtration for paint spray booth wash water. A Delpark field engineer will be glad to show you how you can save on operating and maintenance costs.

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DU PONT PRODUCT NEWS

A new high-speed cyanide copper plating process

DU PONT is now offering a new copper process for plating steel parts and zinc die castings. This new bath has been thoroughly field-tested, and is producing high-quality results on automobile bumpers and grilles, hardware products and wire.

In addition to high-quality results, you get these other advantages with Du Pont's new high-speed copper-plating process:

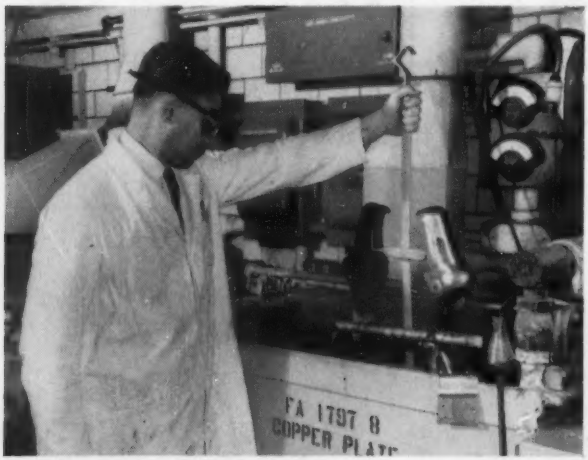
Low maintenance cost—An inexpensive cyanide electrolyte is used that is easily maintained with Cyanobrik® sodium cyanide or Du Pont high-purity potassium cyanide.

Simplicity—Only two new addition agents are needed. The first is Elchem 1396 which sequesters organic contamination and, by promoting smooth anode corrosion, assists in the production of smooth deposits. The other new addition agent—Elchem 1393—greatly increases the bright plating range of the bath and serves as a brightener.

Low use-cost of addition agents—means Du Pont's new Copper Plating Process is *economical* as well as effective.

Consistent, easily-controlled performance—Day-to-day performance is highly uniform—even after shutdowns. Use of the two addition agents—which are stable in the bath—contributes to this trouble-free operation.

Your existing high-efficiency copper bath can probably be converted to the new Du Pont plating process with minimum disturbance of production. For the complete story on this new high-quality copper-plating process, write or use the coupon on the next page.



BRILLIANT COPPER-PLATED BUMPER GUARDS are removed from laboratory experimental bath. New Du Pont Process gives bright, smooth coatings at higher current densities.

A new plating chemical . . . sodium copper cyanide double salt . . . is manufactured by Du Pont specifically for make-up and maintenance of copper-plating solutions formulated with sodium cyanide. Advantages: facilitates make-up and replenishment of plating solution, cuts handling of chemicals, eliminates error in bath make-up and replenishment. Check and return coupon for more information.

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BETTER THINGS FOR BETTER LIVING
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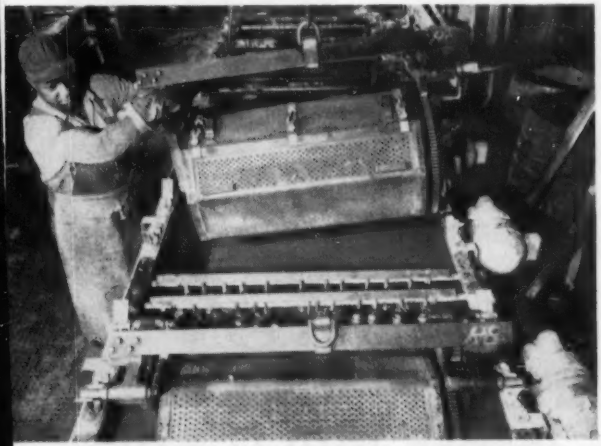

ARREL PLATING with Du Pont ZIN-O-LYTE. Brilliant deposits are obtained irectly on parts of all sizes and shapes.

ZIN-O-LYTE® brightener special can cut zinc plating costs

o bright dipping required—because you get top-quality, brilliant blue-hite zinc plating directly from the barrel with Du Pont "Zin-O-Lyte" ightener Special. This new formulation is specifically designed to cut your erating costs at no sacrifice in quality.

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For further information about "Zin-O-Lyte" Brightener Special or any the other plating chemicals in Du Pont's extensive line, just fill out and il coupon below.

Du Pont will help you solve your plating problems

Du Pont's team of plating specialists is always available for help whenever you need it. Even if you have no serious problems, Du Pont will be glad to show you how to get the most for your plating dollar!

The Du Pont technical representative who calls on you can draw on years of trouble-shooting experience to help answer your plating questions. And he's backed by Du Pont's service and research labs. Here's where your plating problems can be studied and a detailed report prepared for your review.

Du Pont field men work closely with local Du Pont distributors. So whether you call Du Pont or any of their conveniently located distributors, you can count on fast action on all your plating needs.

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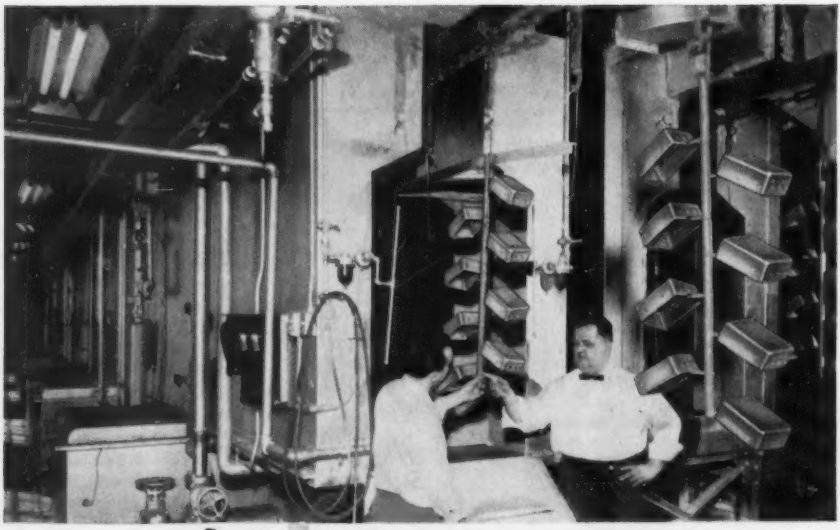

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"QC Cleaner has provided the most consistent, versatile cleaning that we have encountered. Corrosion resistance of organic coatings over Ty-Bonded steel is greater than with other phosphate coatings tested," says this manufacturer who uses a six stage phosphating unit.

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editorial

January, 1958

Root, Hog, or Die!

The above expression, which we understand was in common use in America prior to the turn of the century, was intended to convey the idea that those who would survive must work. This philosophy is characteristic of the hardy, self-reliant people who built this great nation out of a wilderness in record time. This same thinking and its practical application have carried us to world leadership in industrial technology.

Recent events have shown that our claim to technical superiority has been challenged and is open to some question. Since the finishing industry is an essential part of this nation's technical and scientific resources, this industry must see what it, too, can do to advance the nation's interests as well as its own.

Advice in this matter has come recently from Dr. Joseph B. Kushner, who has stated, in part, as follows: "If you are a finishing executive, look around your plant! Have you become complacent about rejects and waste, use of obsolete methods, just passable quality, because your books are showing a nice profit? You may be rudely awakened by a competitor who is not so complacent! Are you a finisher or a foreman? Take stock of yourself! Do you know as much about your job as you seem to think you do? Are you satisfied with yourself just because you're making a good living and things are running smoothly? Wake up! In the uncertain future someone who was willing to work a little harder and study a little harder may give you the surprise of your life!" Dr. Kushner's views and suggestions are expressed more completely in the article beginning on the following page.

Education, research, initiative, and hard work have always been considered essential to progress and success in industry and business. Now the stakes are much higher than mere competitive business advantage—namely, our survival as a nation.

Ezra A. Blount

—EDITOR

Can Our Finishing Industry Meet Russia's Challenge?

By **JOSEPH B. KUSHNER, Ph.D.**
Director, Electroplating School
Stroudsburg, Pennsylvania

SMALL METAL OBJECTS whizzing through space at 18,000 miles per hour have rudely awakened us from our "American Dream." Sputnik and its fellow satellites have splashed the cold water of reality in our faces. That reality is simply this: Russia is abreast or ahead of us in many fields of science and technology; indications are it will strengthen and lengthen its lead as time goes on — unless we do something!

"Small metal objects whizzing through space at 18,000 m.p.h. have rudely awakened us from our 'American Dream.' Sputnik splashed the cold water of reality in our faces."

Under ordinary circumstances such a set of facts would not be ominous. No country has a monopoly on brains; great discoveries have been made in science by men and women from just about every nation on the earth. Nor have the so-called "egg heads" been distributed on the basis of religion or color. But when one country with the avowed purpose of "taking over" starts turning out scientists and technologists on a production line basis—and makes science the order of the day, it's time for us to wake up!

Just what do we have to fear? Is it the threat of military domination? Finishing is my business; I'm not a political analyst, but I have a strong feeling that in spite of what some of the more hysterical columnists have written, we are not in immediate danger of being overrun by bearded communists.

War, while always a possibility, is not a probability. Armageddon is not the immediate threat nor will it ever be unless some lunatic comes to power in the Kremlin or some trigger-happy cretin creates an international "incident." The Russians are far too shrewd to resort to actual war. They know that a hydrogen bomb war will hurt them

Editor's Note: In this article, Dr. Kushner makes several proposals regarding future progress of the finishing industry. We would be pleased to hear what you think about his recommendations. Send your comments to PRODUCTS FINISHING, 431 Main St., Cincinnati 2, Ohio.

as much as it hurts us, no matter what Russian leaders may say to the contrary. Winning a war that leaves you with a lot of radioactive rubble as the spoils is idiotic.

Then where does the long-range danger lie? It lies in the field of economics. There is no need for Russia to become the dominant world power by military might when it can achieve that power by the same method we achieved it — by science and technology, by our far-famed American "know how."

They propose to beat us at our own game by making better refrigerators, automobiles and television sets to sell to the have-not countries at lower prices than we can, and by supplying the world's backward countries with scientists and technicians to "help them out" in developing their natural resources. With the Soviet the new leader in science the chances are many of these smaller nations will bite at the bait. Once they do, it is almost inevitable that they will fall into the Russian sphere of influence.

Perhaps it can be best explained in terms of a simple analogy. Here is Ruritania, Inc., a manufacturing company in the process of expansion. For years it has been a customer of the U. S. Supply Co. It buys cleaners and other products. The boss of Ruritania is approached by a salesman for a new outfit that has been putting on a big sales and advertising pitch, the U.S.S.R. Supply Co. "Look," says the peddler, "we have a better cleaning compound and it sells for less money. Besides, our technically trained field men can give you better, quicker service if something goes wrong, without cost to you. In fact we'll be glad to leave one of our engineers on your premises for

"But when one country with the avowed purpose of 'taking over' starts turning out scientists and technologists on a production-line basis . . . it's time for us to wake up."

a while to help you out with your expansion program."

The boss, impressed by the advertising claims and the generous offer, decides to give their cleaner a whirl. To his surprise, he finds it superior to the U. S. Supply cleaner and a trifle less expensive. To boot, a highly skilled U.S.S.R. technician is always at hand to help and advise with problems in the plant. Pretty soon—you guessed it!—the U. S. Supply Co. salesman is on the outside looking in and the U.S.S.R. salesman is taking fat orders not only for cleaners but everything else as well. And the U.S.S.R. technician is so firmly entrenched he's practically running the joint!

If this same process continues with most of the U. S. Supply Company customers, you know the rest. No diagram is needed!

The finishing of metals is a branch of science and technology, and, as with all fields of science and technology, it is faced by the same great challenge. Can we meet that challenge? I think we can and I hope we will, for if we do not, we or what's left of us may end up as a Russian satellite!

The way we in the finishing industry can meet the challenge is easy to put down on paper but hard to carry out. We need three things: 1) more basic research; 2) a school at college level devoted exclusively to the finishing of metals; 3) more education for those working in the field.

Basic Research: A Necessity

Basic research can be thought of as a mining operation. The scientist doing pure or basic research is like a prospector. He discovers and digs out some ugly looking stuff from the ground, he piles it up and fiddles around with it a bit. If no

"With the Soviet the new leader in science, the chances are many of these smaller nations will bite at the bait . . . They will fall into the Russian sphere of influence."

"The scientist doing pure or basic research is like a prospector. He discovers and digs out some ugly looking stuff . . . goes on to look for new and stranger bodies of ore."

one expresses any interest in it and the assay office (industry) tells him it's worthless stuff, he isn't fazed. He's just prospecting anyway. He goes on to look for new and stranger bodies of ore.

The first pile of ore may lie around for years with nobody giving it a second thought. Then one day a technologist comes along, refines the stuff and works it into a beautiful doohickie which makes a lot of money and puts a lot of people to work. But after a while the supply of ore is used up, figuratively speaking. From then on the technologist will turn out the same kind of doohickie, a shade improved here and there but essentially the same as before. There is nothing radically new, no real improvement and things get pretty much in a rut.

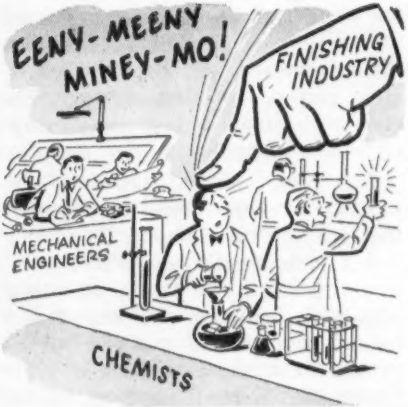
On the other hand if we set scientists to prospecting and digging for new bodies of ore by grubstaking them in one way or another, then the technologists following behind them can produce not only improved doohickies but brand new thingumbobs as well. Take one little item as an example. We know next to nothing about how an electrodeposit is built. More basic research in this field might eventually lead to thin, porosity-free deposits, mirror-bright stress-free deposits, deposits with controlled directional properties and who knows what else.

The research laboratories of the supply houses do some basic research. But their main interest is in making the most of what is already known (applied research). The American Electroplaters' Society

JOSEPH B. KUSHNER, director of the Joseph B. Kushner Electroplating School, 115 Broad Street, Stroudsburg, Pa., was recently awarded the degree of Doctor of Philosophy in Metallurgical Engineering at Lehigh University. Dr. Kushner's dissertation, entitled "A Critical Evaluation of Some Factors Affecting Residual Stress in Electrodeposited Metals," uncovers a number of interesting facts regarding stress in electroplated metals, and proposes a new theory to explain the origin of these stresses which can cause plater's nightmares: peeling, cracking and blistering, distortion and reduction in fatigue strength.

Dr. Kushner also holds a chemical engineering degree from the Cooper Union Institute of Technology and a Masters degree in metallurgical engineering from Lehigh University. Prior to starting the school which specializes in home study courses in modern electroplating and metal finishing, some ten years ago, he acted as a consultant to the industry. During the war years he served as senior electrochemical engineer on the SAM branch of the Manhattan Project at Columbia University and was awarded a bronze medal. Before that Dr. Kushner worked for many years as an electroplater, electrochemist and engineer.

"As finishing grows more and more scientific in nature, the industry is going to need more and more scientifically trained men..."



"At present, we get many of our men in the Finishing Industry by hit and miss methods. A chemist is drafted into the plating shop..."

subsidizes basic research along with some applied research. It's a step forward but not big enough in terms of the strides being made by the Soviet Union! What we need is a broad basic research program subsidized by the entire industry.

A College for Metal Finishers*

Closely tied in with the industry's need for more basic research is the industry's need for a school on college level, exclusively devoted to finishing metal. As finishing grows more and more scientific in nature, the industry is going to need more and more scientifically trained men to keep it growing and prospering. Russia has at least one school of this type where 2- and 4-year courses are given, the first leading to the title of finishing technician, the second to the degree of finishing engineer or scientist.

At present we get many of our men by hit-and-miss methods. A chemist is drafted into a plating shop job, a mechanical engineer in quality control is given supervision of finishing by a desperate manufacturer looking for a little more trouble-free production. These men know next to nothing about electro-

---

**The American Society of Tool Engineers has planned to establish a school and training center for tool engineers, and a research center with laboratory facilities.*

At the Society's recent semi-annual meeting, ASTE officers were given the go-ahead signal to investigate the requirements for this expansion of educational and research activities.

ASTE, which has been contributing to the advancement and dissemination of scientific knowledge in tool engineering for over twenty-five years, looks upon this step as perhaps the most significant action undertaken by the Society recently.

plating and finishing, having no special training for it. Eventually they learn, of course, but wouldn't it be a lot easier and lot more efficient if the industry had a source of trained manpower with the specialized knowledge required?

The regular colleges, in general, cannot supply this sort of specialized training. Their curricula are already overburdened with specialized courses and their laboratories are already busy with other types of basic research. What we need is an industry-supported college, specializing only in finishing and related subjects.

In the laboratories of such a school, basic and applied research could flourish and men could be trained to man our industry and keep it growing. A school on college level would help attract the young people who will become the plating scientists and technicians of tomorrow. Before sputnik we needed such a school badly. Now the need is even greater.

More Education for Those in the Field

The first two proposals will take time and doing to get them off the ground, even though we need them badly, unless a crash program is worked out. On the other hand, we can improve our competitive status immediately by learning more, as individuals engaged in the industry, about what we are doing. Never was that old saying more true, "Knowledge is power."

We need knowledge and the power that it gives, more than ever. Unfortunately, humans are basically lethargic. When times are good, jobs are plentiful and money is rolling in the tills, why bother to study? Why bother to learn more when you can coast along on the old American "know-how?" A soporific TV show may be a lot harder on the eyes than a textbook but it's

"A soporific television show may be a lot harder on the old eyes than a textbook, but it's certainly a lot easier to look at!"

"Do you want freedom? Then stop burning so much gasoline and start burning the midnight oil! Take time to learn more."

certainly a lot easier to look at!

Yes, we have gotten soft. We love our creature comforts not wisely but too well. In Russia though, they are not coasting along. They've got their shoulders to the wheel and they're pushing with everything they've got. No matter that they have no TV to speak of, no cars in every garage, no dish washing machines and automatic dryers. They figure those things are less important than knowledge. There's time for these "decadent capitalistic comforts" after they take over. It's as simple as that.

Do you want the freedom to enjoy the pleasures our American way of life has brought us? Then stop burning so much gasoline and start burning the midnight oil! Take time to learn more. No matter how old or how young you are, no matter how little or how much you already know, you can always learn more! There are many good texts available; there are residence and correspondence courses you can take; there are periodicals and magazines you can read. If you have people working for you, encourage them to learn more about their work. Not just the narrow, immediate aspects of it but the broad fundamentals.

To give an example of what I mean, don't be like the executive who wrote me, "Your home study course looks as if it's too comprehensive. We're not interested in the fundamentals of electroplating and those other subjects in the course. We only do cadmium and zinc plating." Funny? No. Because its the sad truth that many in the industry today have such a short-sighted viewpoint.

So I say, wake up, finishing industry! We've got our burden to bear in keeping America free. We must meet the Russian challenge—or else. We can do it if we value our freedom more than our pleasures. History tells a sad tale of the nations whose citizens valued pleasure more than freedom and knowledge.

★ ★ ★

Movie on Push-Button Paint. Self-spraying paint is the subject of a movie presented by Sprayon Products, Inc., Cleveland, Ohio, custom-loader of pressurized containers. Entitled "The Finishing Touch," the film is a short course in push-button painting.

Touch up of damaged finishes and complete refinishing jobs are demonstrated on a variety of appliances and equipment, showing how to get the most out of "aerosol" paints.

"The Finishing Touch" is a 16 mm sound film in full color, running 11 minutes. Interested groups may schedule showing at no cost except transportation. Descriptive folder and information on booking arrangements are available from **Sprayon Products, Inc.**, 2075 East 65th St., Cleveland, Ohio.

Finishing Regina Small Home Appliances

Growing company installs electrostatic spray to increase production . . .

By JAMES CURTIN, JR.
Vice President
The Regina Corporation

REGINA IS AN OLD NAME in the manufacturing industry, dating back to 1892 when the company's prime product was the old music box.

Today the Regina plant produces floor polishers and scrubbers, and

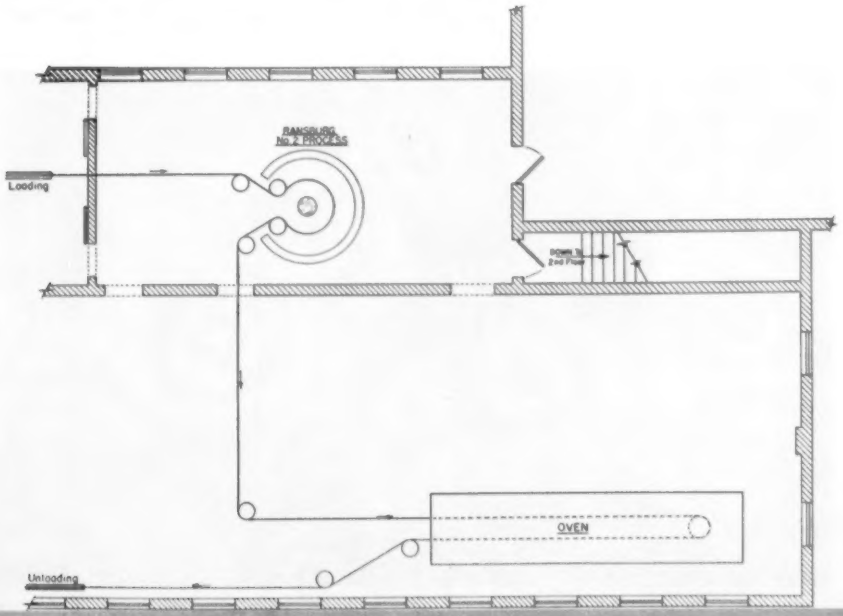


Fig. 1—Plant layout for finishing installation at Regina Corporation, Rahway, New Jersey.

Fig. 2—Regina polisher and scrubber comes in two-tone finish — driftwood and copper.

the Regina Electrikbroom, a modern vacuum cleaner.

Although Regina has been producing fine products for the home since '92, it has been only since the war that it has gone into a volume business on floor polishers for use in the home.

With increased production demands, it was apparent that the company would have to modernize its finishing department.

Four parts of the floor polisher and five parts of the Electrikbroom are painted. The cast aluminum housing of the polisher, for instance, is painted "driftwood," and the handle is copper colored.

When the Ransburg No. 2 process reciprocating disk was an-

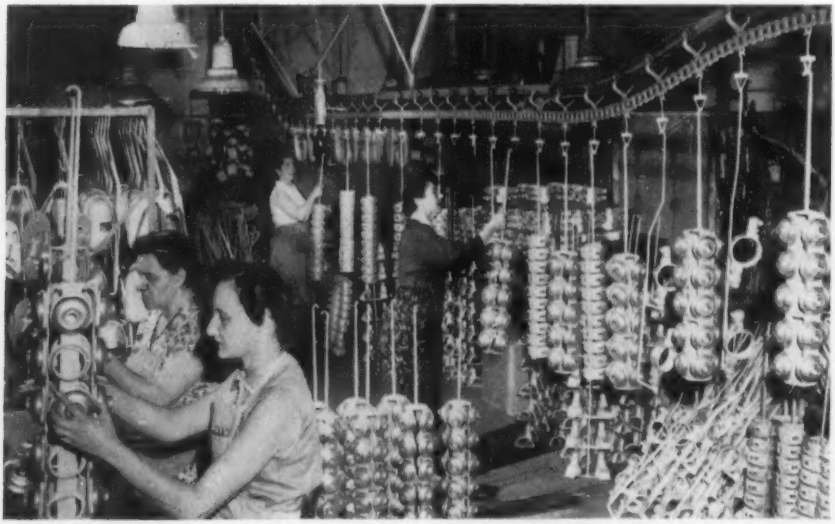


Fig. 3—Loading station. Small parts—filter caps and swivel clamps for Regina Electrikbrooms —are grouped as many as 20 to a work holder for painting electrostatically.

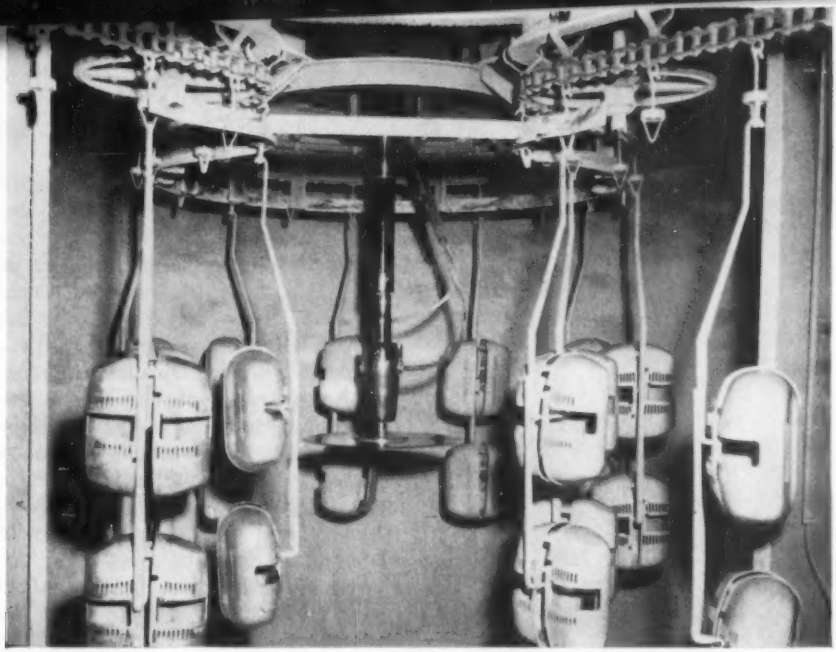


Fig. 4—The attractive aluminum housings used for Regina floor polishers are painted electrostatically as the overhead conveyor makes a loop around the Ransburg No. 2 reciprocating disc. Unpainted parts enter at left, finished parts head for oven on right.

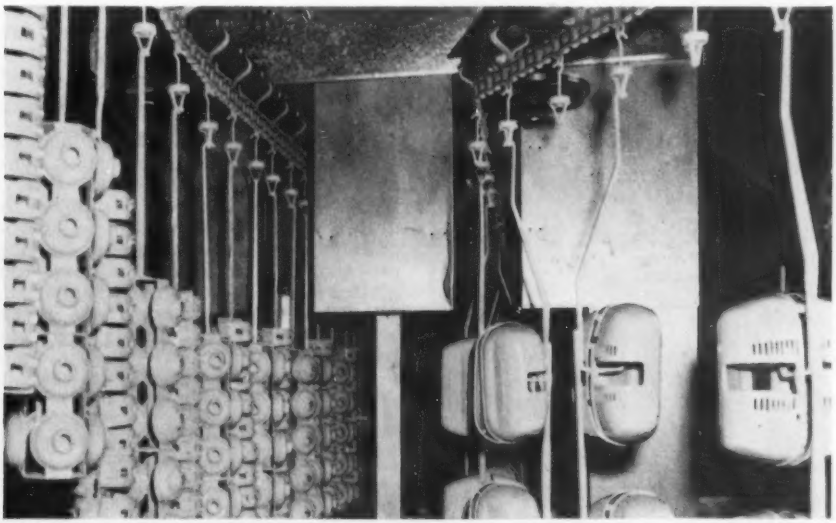


Fig. 5—Polisher housings, hung four to a fixture, are shown leaving baking oven, while smaller pieces enter oven at left. All parts make double pass through the baking oven.

nounced in the trade magazines, company officials became interested, for it appeared to be a solution to their painting problem. Sample parts were sent to the Ransburg laboratories in Indianapolis for testing. After seeing the work run in the labs, Regina officials made plans for changing to automatic electrostatic spray painting.

With the new setup, five men rack parts, and one man hand sprays parts which require reinforcement.

Some of the smaller parts, such as swivels, swivel clamps and filter caps, are grouped on workholders spaced at 12 to 24-inch centers, depending upon part sizes. Smaller pieces are hung 20 to a fixture, while only four housing covers are hung on a holder.

The parts to be painted rotate as they enter the loop in the electrostatic spray area. Length of the stroke on the reciprocating disk is adjustable to 48 inches, which amply takes care of the handles of the floor polisher. The single reciprocating disk is 15 inches in diameter. **As the painted pieces leave** the painting area, the conveyor rises over other work areas, and the painted parts travel overhead on the way to the oven. The conveyor, which is 560 feet in length, travels at 7 f.p.m. Parts bake at 375 deg. F. for eight minutes in the infrared oven. From the oven, parts go to the inspection and unloading station and then to assembly.

Fig. 6—Unloading station. Finished parts are unloaded, inspected, and taken to assembly. (Photographs courtesy Ransburg Electro-Coating Corporation, Indianapolis 7, Indiana.)

★ ★ ★

Research and Development on Electrodeposition of New Chromium and Chromium-Alloy Plate. By L. D. McGraw and others, Battelle Memorial Institute, for Bureau of Aeronautics, U. S. Navy. 82 pages. Price, $2.25. (Order PB 111911 from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

This report describes a number of developments in high-efficiency chromium and chromium-alloy plating processes. One was a chromium-iron plating bath that produces hard, bright chromium-iron plate with abrasion resistance and a crack system similar to conventional chromium plates. Another was an improvement in the process for producing matte-type chromium-iron alloys.

The report describes the work on plating bath improvement, operating conditions, properties of chromium-iron alloy plates, deposition of alloys other than chromium-iron, and fundamental studies of the operation of the trivalent bath.

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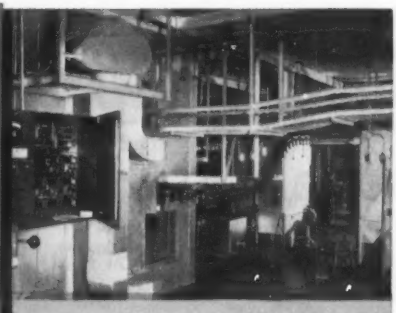
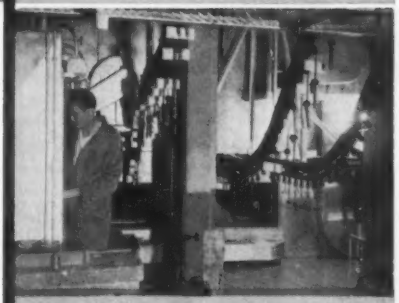
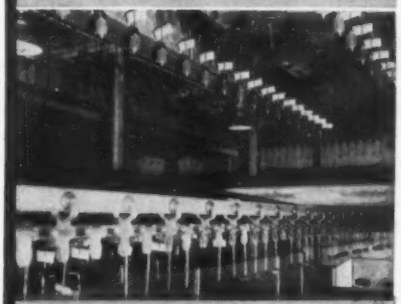
Burdett Installation Amortized in 18 Months
by
Fansteel Metallurgical Corporation







A new multi-pass, conveyorized, Burdett Finishing System — jointly engineered by Mr. Henry H. Cormier, Fansteel's Process Project Engineer and Burdett Engineers — contains in 1,000 sq. ft., the facilities which normally would require 5,000 sq. ft.

Featured are air-stream heated ovens employing the famous Burdett "Radiant Heat" Burners for extreme economy, dip-spin finishing and conveyorized handling of products of manufacture.

RESULTS — night crew eliminated . . . former daily unit output now produced by one-half the former personnel requirement without added effort . . . plant potential increased by 40% to 50% . . . all this and greatly increased production too!

The total cost of this project included: revamping of material flow system; dismantling old equipment; cost of new equipment and cost of an additional three compartment batch oven to accommodate production requiring truck handling. The system has eliminated production traffic jams and constant re-positioning of trucks to move scheduled loads — thereby reducing the material handling problems to a minimum.

SEE OUR CATALOG IN SWEET'S PLANT ENGINEERING FILE OR WRITE FOR COPY

MORAL: *When you have a finishing system problem — BE SURE to consult Burdett Engineers*

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Special Reports On Finishing

NUMBER II—Paint Base, Corrosion-Resistant Finishing with Iridite

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a good paint base and decorative finishes for non-ferrous metals. However, continued developments have been so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can obtain proper surface preparation for painting and increase product durability with a single multi-purpose chemical pretreatment. Report I on decorative, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, it is an accepted fact that metal surfaces should be prepared before painting to make possible an efficient paint system. Naturally, this preparation should provide for good initial paint adhesion. Chemical treatments have proved extremely effective in this respect, particularly those of a neutral or preferably acid nature. Further, to be most efficient, chemical treatments should provide a non-porous barrier to maintain adhesion by sealing the metal from the paint and moisture. They should also provide a self-healing film which prevents lateral corrosion in the event that bare metal is exposed through scratching.

The Iridite chromate conversion coatings meet all these requirements. Iridite is a chemical conversion treatment for surface preparation. It provides initial paint bonding by molecular adhesion. It is acid in nature and produces a film that is gel-like and non-porous in structure. Thus, the Iridite film effectively seals the metal from the paint and from moisture penetration. Because the film contains certain relatively soluble constituents, it will protect areas scratched through to bare metal and prevent lateral corrosion. This is accomplished by a gradual leaching of these constituents into the damaged area.

Further, because of its gel-like, non-crystalline nature, the Iridite film will not affect the appearance or texture of the paint film, nor will it dust or powder to

(ADV.)

Non-Ferrous Metals

mar the painted surface. Because the film is non-porous, paint coverage is increased, thus substantial savings in paint costs will be realized. In addition, treated parts may be stored for long periods of time prior to painting without the risk of entrapped moisture causing blistering when painting.

Iridite chromate conversion coatings are widely used with equal ease and success under both baked and air-dried paint systems. While the actual adherence properties of the Iridite film do not increase appreciably with its thickness, corrosion protection does. The protection of the Iridite film is proportionate to its thickness and should be taken into consideration when selecting the Iridite to meet your needs. However, it is sometimes necessary to sacrifice maximum corrosion protection for appearance when a finished part is to be only partially painted. For example, it may be desirable to use a thin, clear, bright Iridite film if the unpainted areas must present a chrome-like appearance. A typical case is that of instrument housings on which the exterior is painted and the inside left unpainted.

On the other hand, if all surfaces of the product are to be painted and maximum corrosion protection is required, the heavier and most protective Iridite films should be used. For example, all surfaces of zinc die cast fruit juicers are finished with a highly protective Iridite film prior to painting to provide maximum resistance to the corrosive action of fruit juices.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. In addition to providing an excellent base for paint, the Iridite films also have high decorative value when used as final finishes in themselves.

These films can produce a wide variety of pleasing appearances including clear bright, iridescent yellow, bronze, olive drab and brown. In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to their functions as protective and decorative finishes, and as bases for organic finishes and bonding compounds, Iridites have low electrical resistance. Some can be soldered and welded. The film does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.

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Automatic Loader Speeds Plating of Auto Parts

A major advance toward full automation of metal-finishing is made by the completely automatic elevator-type conveyor now in operation at the Eaton Manufacturing Company.

By RALPH L. EVERSTINE
Chief Electrochemist,
Stamping Division of the
Eaton Manufacturing Company

Ralph Everstine has been connected with the electroplating industry for 24 years. He has been with the Eaton Manufacturing Company, in the Cleveland Stamping Division, for seven years, the past three years as chief electrochemist.

He is a member of the American Electroplaters' Society and of the American Society for Testing Materials.

A NEW PLATING LINE AT Eaton Manufacturing Company's Cleveland Stamping Division Plant represents an important step toward entirely automatic finishing — including loading, unloading and transfer.

Eaton Manufacturing produces chromium plated steel automotive parts in this plant. Operations performed include stamping, welding, polishing, buffing, electroplating, inspecting and shipping. Parts produced range from 10 to 34 inches in length and weigh from one-half to eight pounds.

Weight of the parts being plated had been a headache for this plant. It limited the plant's production, because the workers could handle only a limited number of parts on a rack when they had to lift the racks in loading, unloading and transfer operations. In an effort to overcome the limited production, the plating system was overloaded almost constantly, resulting in frequent breakdowns and increased maintenance.

When the company recently moved into a larger plant, officials recognized the need for a system that would eliminate these difficulties.

The heart of the new system is a fully automatic elevator-type conveyor built by Hanson-Van Winkle-Munning Company, Matawan, N. J. This system includes automatic transfer of parts from tank to tank

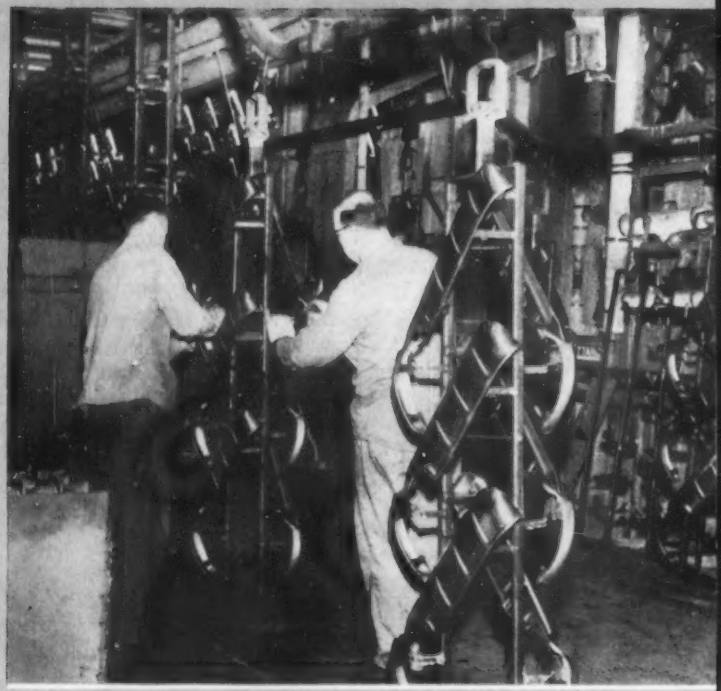

Fig. 1—Grill sections are loaded on racks suspended from monorail. Racks have just been cold-rinsed and are moving left to right. Box of raw, buffed grill guards is in left foreground.

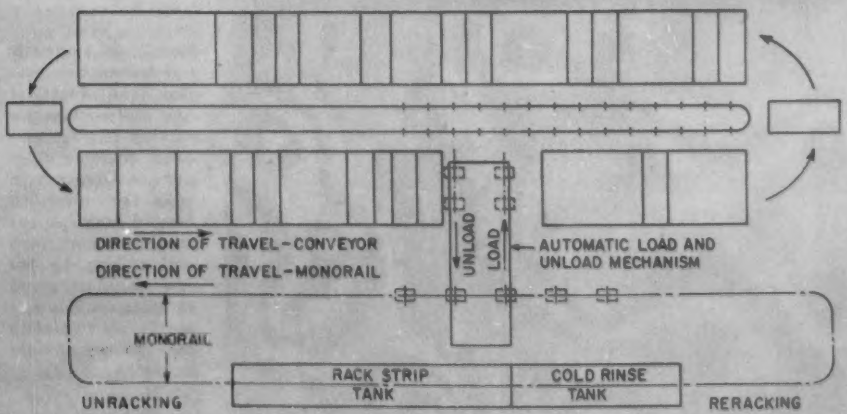

Fig. 2—Drawing shows installation of H-VW-M's automatic load-unload unit. Loader moves on rails between electroplating conveyor and plant monorail, and is indexed in exact sequence with these two elements. Drawing shows unit in position to unload racks of finished auto parts from electroplating conveyor and load new parts onto conveyor.

". . . Eaton has been able to combine nickel and chrome lines into a single conveyorized line."

as well as a transfer mechanism that automatically loads and unloads carrier racks on the same indexing sequence as the plating conveyor (Fig. 1).

As a result of the new installation, which includes an H-VW-M automatic plating conveyor, Eaton has been able to combine nickel and chrome lines into a single conveyorized line. The company has also switched to larger racks that hold more parts and larger solution tanks with almost twice the capacity of the line in the company's former plant.

The only manual handling of parts is at the points where parts are hung on or removed from the racks (Fig. 2).

Production has increased from 25,000 plated parts a day to 48,000.

How the Load-Unload System Operates

Workers hang parts on the racks in the rack-loading area. The racks are carried from this point to the load-unload mechanism on a mono-

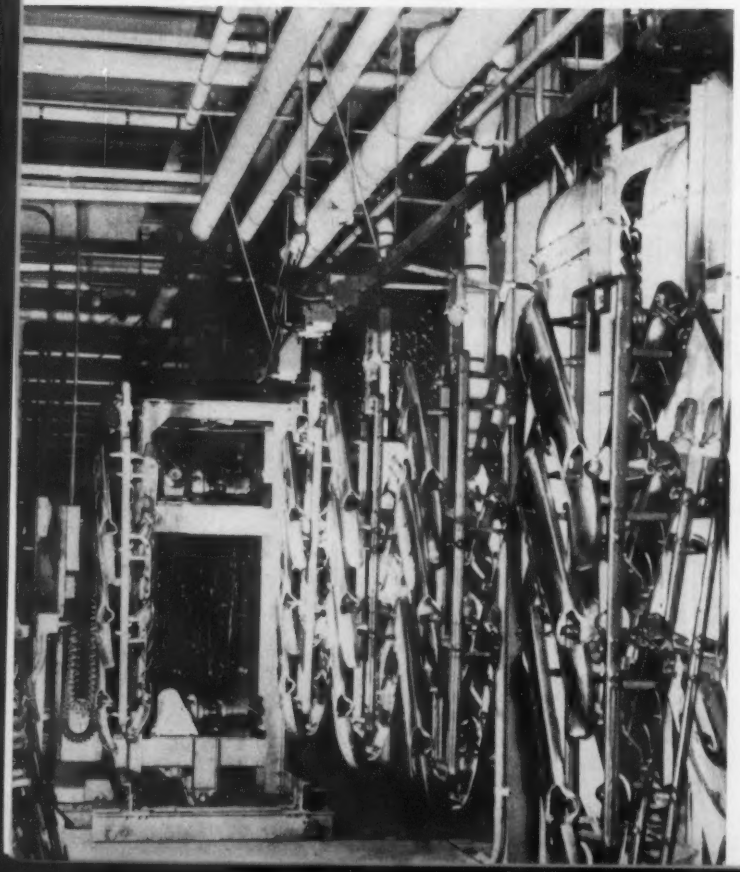

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Fig. 3 — Automatic transfer machine does two jobs. Racks of raw grill sections are moving on the overhead monorail from right foreground to transfer machine (center) which is unloading plated parts and picking up the raw ones prior to shuttling on its tracks to the electroplating conveyor out of sight on right.

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". . . an automatic signal is transmitted to the load-unload mechanism, which then moves in to pick up two work carriers . . ."

rail conveyor (Fig. 3). Upon arrival at the automatic loader, an automatic signal is transmitted to the load-unload mechanism, which then moves in to pick up two work carriers from the monorail and transfer them to the plating conveyor. Lifting cranks disengage and place the work carriers onto the loading mechanism (Fig. 4). Similar cranks disengage the carriers from the loader and deposit them onto the empty hooks of the automatic plating machine (Fig. 5).

At the same time, a similar process removes two carriers from the plating conveyor and transfers them to the monorail conveyor, which carries them to the unracking area and then through the rack strip tank and a rinse tank, and finally to the reracking area. Both automatic loading and unloading are performed with pairs of carriers.

The automatic loader is a transfer machine which shuttles, on a pair of rails, between the finishing conveyor and an overhead monorail.

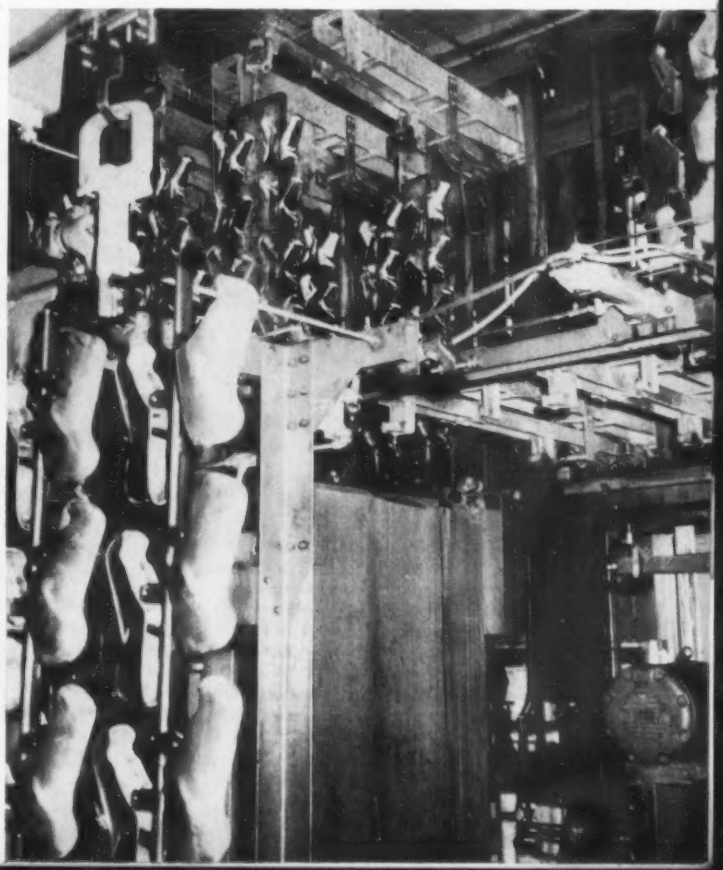


Fig. 4 — Closeup of automatic loader transferring work from plant monorail. The loader's lifting "crank" is engaging a rack hung from the monorail. It will then shuttle out of the way until the monorail advances one position, then return for a second rack. These racks are loaded on the plating machine carrier arms in the background. At the same time, the loader will pick up the finished work shown at top center, which is just emerging from the final rinse tank. These racks will be shuttled to the monorail.

"The loader allows Eaton to synchronize the load-unload cycle of two different plating operations, using a common monorail."

At the top are two double stations, one for loading, one for unloading.

Racks of raw parts move into position at the plating machine, following a conventional flow pattern. Racks of finished parts move away on the same empty hooks. There is no mixing of raw and finished stock on alternate hooks.

The loader allows Eaton to synchronize the load-unload cycle of two entirely different plating operations using a common monorail.

The monorail can also serve for intermediate operations such as degreasing, drying or rack stripping.

All controls for the three conveying elements—monorail, loader and electroplating machine — are in a centralized panel, so that the entire operation can be coordinated. Every 72 seconds two carrier racks of plated parts become positioned for unloading and signal the unloader to move in. The loader is timed to operate in exact sequence with the electroplating conveyor and the monorail. The installation has manual controls for all elements, enabling forward or reverse jogging into any position. Controls are interconnected, to permit restarting a cycle from any position.

Fig. 5—Load-unload unit. Plating conveyor is in background. Loader is removing racks from plating machine, is about to load raw work racks into the machine. Then loader will automatically reverse, transfer the plated parts to the monorail, pick up another load of raw parts and move back to the plating machine.

Electroplating Conveyor

The H-VW-M plating conveyor (Fig. 6) has a double-file carrier system. Either lane may be operated alone, or both may be operated at the same time. This permits closing down one lane for servicing without stopping production.

Another advantage of having two lanes is that they may be operated at different current densities, which permits different sizes and shapes to be segregated for the most efficient deposition.

After stamping, welding, polishing and buffing operations are completed, raw parts pass through several washes, cleaners and acids. They then reach the nickel plating tank, where they remain for 55

"The entire double-plating operation, which includes 12 different immersions, requires two hours and 12 minutes."

minutes before further rinsing. Then they move into the chromium plating tank.

Immersion time in the chrome tank is five minutes. After several more rinses, the plating operations are concluded and finished parts are ready to move into the automatic unloader.

This system allows for skipping certain operations, if desired. Any one of the cleaner or acid tanks may be by-passed. One plating operation may be by-passed: after the parts have travelled two-thirds of the way through the nickel tanks, they may be raised and will by-pass the remaining one-third of the nickel tanks.

The conveyor handles 50 carrier loads of parts every hour. The entire double-plating operation, which includes 30 different immersions, requires two hours and 12 minutes. Transfer time of the racks from one tank to the next is 40 seconds.

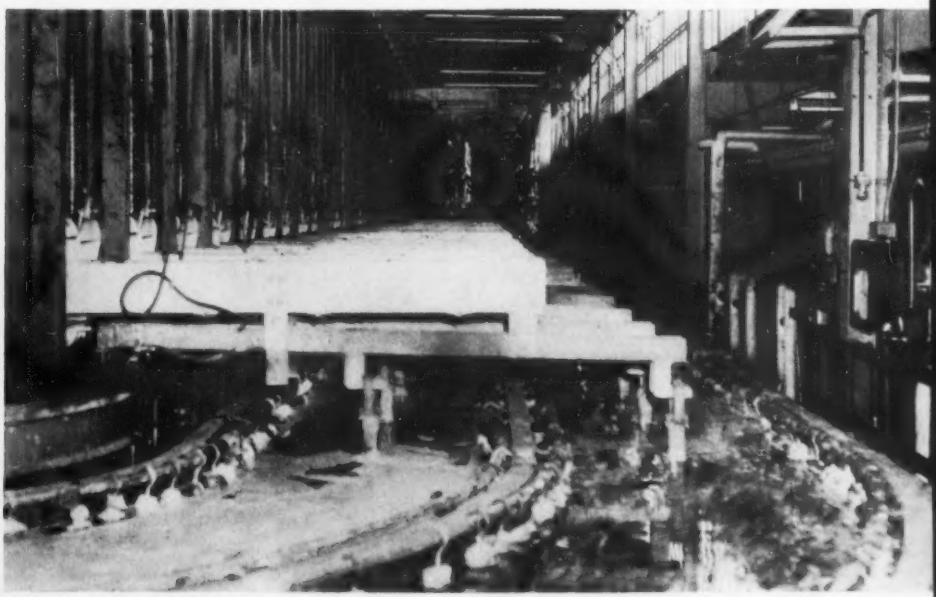


Fig. 6—General view of racks moving through the plating cycle at Eaton Manufacturing Company's Stamping Division. Racks in the foreground are submerged, holding parts deep in the plating bath. Racks in the background are elevated, with parts moving into position for dipping into the next solution. Plating conveyor has a double-file carrier system. Either lane may be operated alone, or both may be operated at the same time. This permits closing down one lane for servicing. (Photographs courtesy Hanson-Van Winkle-Munning Co.)

Epoxy Coatings: Performance and Application Data

By FRED GRUSHOFF
Chemical Engineer
Metalab Equipment Company
Division of Norbute Corporation
Hicksville, L. I., New York

TODAY, EPOXY COATINGS ARE WIDELY USED for applications requiring resistance to chemicals and abrasion. Not so long ago they were fairly new products that showed high promise but had not been tested extensively.

At Metalab, our first experience with epoxy coatings came about approximately five years ago, when we installed laboratory furniture at the Shell Chemical Corporation's Technical Service Laboratory, Union, New Jersey. The engineers and laboratory personnel requested that we coat their furniture with a finish based on Shell epoxy resins. Following this we made our own evaluation of the material. Since 1952 we've used nothing but epoxy coatings on all of our laboratory equipment. The results have been truly outstanding.

One large pharmaceutical company used our epoxy coated laboratory furniture for four years in one location and then transferred it to a new laboratory. Despite staining by foods and cosmetics and heavy wear plus the abuse received in transit, there was no need to refinish the furniture before use in the new laboratory. Superficial cleaning with acetone and carbon tetrachloride restored the luster and appearance of the finish.

From the chemical laboratory of an Eastern university came this account of the resistance of epoxy coatings to attack by sulfuric acid: the acid, left overnight in a burette used for titrations, leaked out, splashed over the surface of the laboratory bench and ran down the side of the metal cabinets below; the finish on the cabinets remained unaffected and a costly refinishing job was unnecessary.

In the new research laboratory of a leading soap manufacturer, a maintenance problem was solved by the installation of epoxy-coated laboratory furniture. In the old laboratory, the corrosive action of strong detergents and the effects of oils and fatty acids caused flaking and peeling of the finish on storage cabinets and drainboard units. To-

Laboratory furniture manufacturer tells about five years of experience in using epoxy coatings . . . their excellent resistance to chemicals . . . and how his company applies them . . .

day, after over three years of rough and continuous usage, including the unexpected mishaps which sometimes occur in laboratories, the epoxy coating has retained its original color, without peeling.

At this same laboratory, a broken steam line sprayed steam and hot water against the new cabinets without affecting the finish or damaging the metal.

At an electrochemical plant in the southwest, corrosive chemicals and fumes attacked the finish on furniture in the lab and corroded the base metal. In less than 18 months the laboratory furniture had to be replaced. After 38 months service in this same laboratory, epoxy-coated furniture — fume hoods, storage cabinets, work benches and heating and drying cabinets—has withstood the attack of chemicals and corrosive fumes, and the furniture remains in good condition.

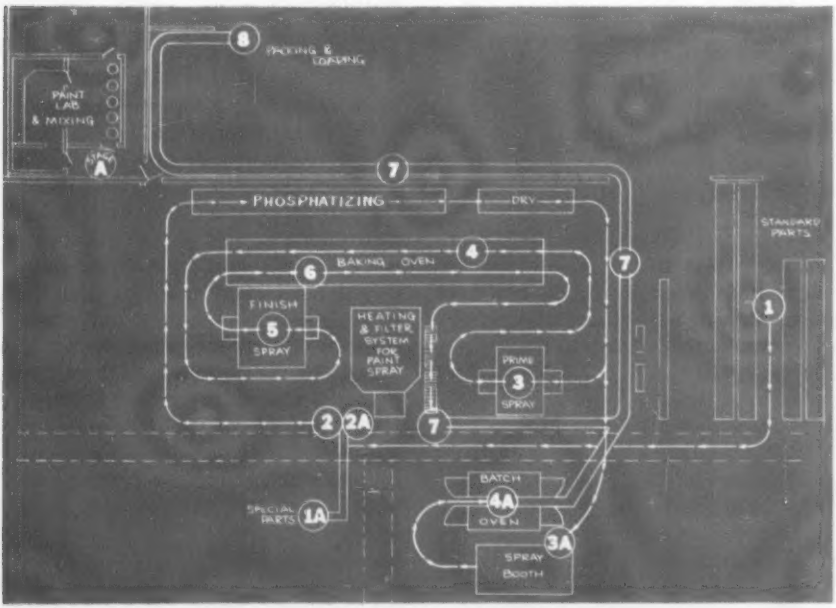


Fig. 1—Schematic diagram traces flow of parts through finishing department at Metalab.

"Cured films can withstand a 28-inch-impact and 1/8-inch mandrel bend . . ."

Results of Tests on Epoxy Coatings

All interior and exterior surfaces of Metalab products are covered with both prime and finish coatings of Epon* resin-based coatings formulated to Metalab's specifications. The polymerized film resists the action of the following reagents without any effect other than slight loss of luster or discoloration (one-c.c. puddle test for one hour):

Acetic Acid	1% to glacial
Sulfuric Acid	25%, 50%, 75%
Hydrochloric Acid	10%, 37%
Nitric Acid	10%, 25%, 50%
Phosphoric Acid	85%
Perchloric Acid	60%
Formaldehyde	37%
Phenol	85%
Ammonium Hydroxide Concentrate	
Carbon Tetrachloride	
Chloroform	
Acetone	
Xylol	
Furfural	

In addition to the above, the finish is unaffected by up to ten days immersion in the following reagents, at room temperature:

Acetic Acid	1% to gacial
Sulfuric Acid	up to 50%
Hydrochloric Acid	up to 20%
Nitric Acid	up to 10%
Phosphoric Acid	up to 85%
Sodium Hydroxide, all concentrations	
Toluene X	
Xylene	
Glycerine	
Formaldehyde	30%
Methyl isobutyl ketone	
Ethyl Alcohol	
N- butyl Alcohol	
Diacetone Alcohol	
Hexylene Glycol	
Methyl isobutyl carbinol	
Non-ionic detergent	100%
Sodium Methoxide 40% in methanol	
Sodium Chloride	25%
Sodium Hypochlorite	5%
Saturated Salt Vapor at 100 deg. F. for 500 hours	

Cured films can withstand a 28-inch-impact and 1/8-inch mandrel bend when supported on an 18-gauge steel panel; they have a pencil hardness of 8 H to 9 H.

How Metalab Applies Epoxies

Equipment to be coated at Metalab moves automatically on an overhead conveyor through metal cleaning, spray application and baking equipment.

The parts are prepared for painting in a six-stage washing machine. After alkaline cleaning and rinsing they receive a phosphate spray followed by a chromic acid etch to provide maximum paint adhesion. Emerging from the dry-off stage, the metal surfaces are almost completely dry. Complete drying takes place as the parts continue to the spray booth, where the prime coats are sprayed on.

The prime coat is an Epon resin formulation. The solvent used in this material is a "high-low" blend,

*Reg. Trademark, Shell Chemical Corporation

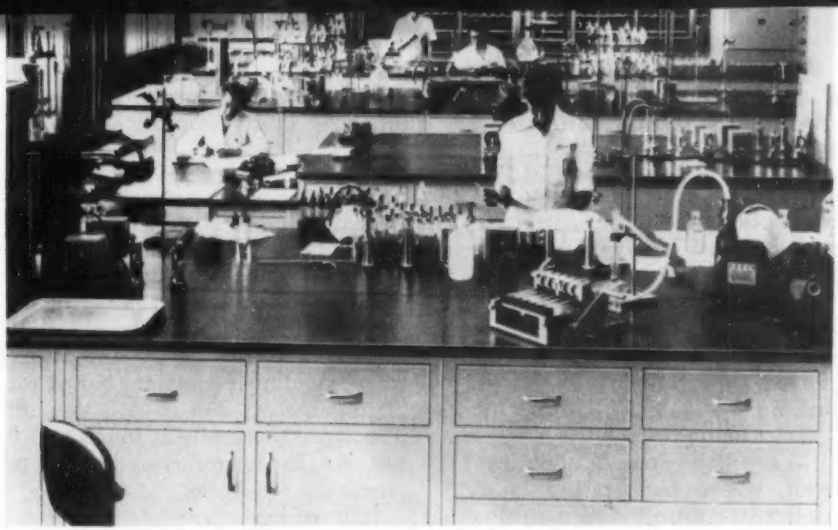
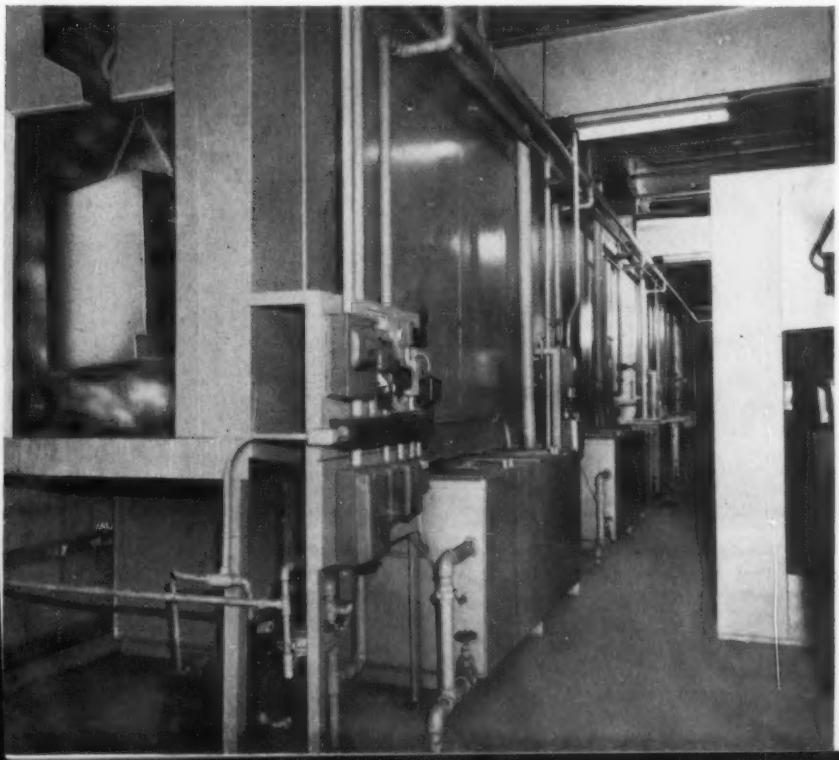


Fig. 2—Metal laboratory furniture such as that shown above is built by Metalab Equipment Company, Hicksville, Long Island. Finish used is an epoxy-resin-based coating, which has been found to give excellent resistance to various corrosive chemicals used in labs.

Fig. 3—Overhead conveyor brings parts into this cleaning and phosphatizing machine.



". . . temperature is automatically controlled to ensure complete polymerization of the film."

a combination which has proved to be the most foolproof in the spraying of epoxy coatings. In addition to greater coverage and film build, the solvent produces better flow and leveling characteristics, prevents orange peel effect, and results in improved appearance.

Baking

After being primed the parts travel to a 60-foot double-tunnel baking oven, where temperature is automatically controlled to ensure complete polymerization of the film. The prime coats are baked for 22 minutes at 395 to 410 deg. F. Thickness of the prime coats is held between 0.7 and 0.8 mil.

Finish Coats

From here the conveyor carries the parts to the second spray booth for application of finish coats. Parts then return to the baking oven, where the finish coats are baked for 22 minutes at 395 to 410 deg. F. The top coats are held to 0.9 to 1.0 mil. An Elcometer gage is used to check the thickness.

Painted parts pass to the final assembly area, where hardware is mounted, sound-deadening material is inserted for the double-walled

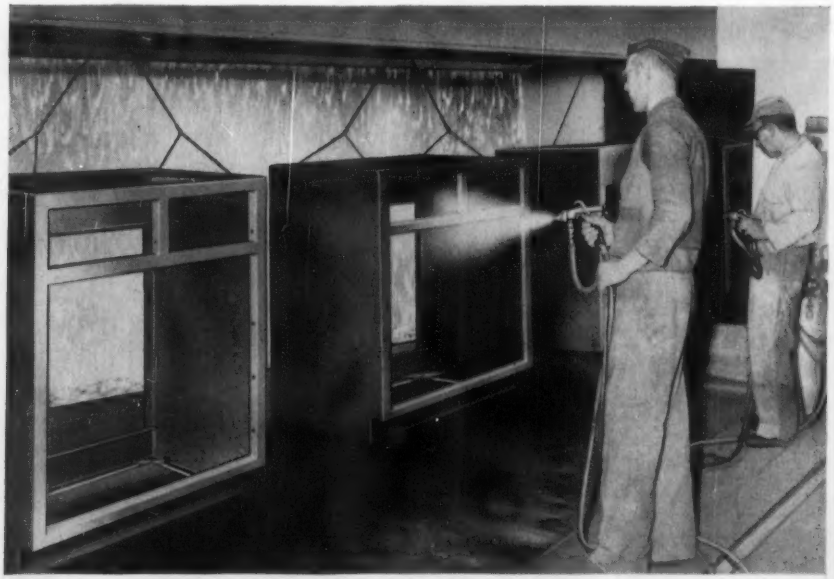


Fig. 4 — Spray gun operators apply epoxy prime coat to laboratory furniture in this water wash spray booth. Thickness is held between 0.7 and 0.8 mil. Both prime and finish parts then go through a 60-foot oven, where temperature is held at 395-410 deg. F.

drawers, ball bearings are lubricated, doors and drawers are adjusted, and all cabinets are inspected for quality and conformance to the customer's specifications.

Assembled equipment is wrapped, packaged, or crated for shipment.

Special Parts

A separate and complete spray booth and baking oven are available for finishing special parts. These parts pass through the same washing and phosphatizing machine as the other parts, but are shunted to a special-equipment spray booth and then to an automatically controlled oven for specific time lengths, before passing to the plant's final assembly area.

Paint Supply

In the Metalab paint laboratory, quality-control tests are run on all incoming paint. Viscosity checks are made under controlled temperature conditions. Both the prime and finish coats, mixed with the solvent in the paint-mixing room, are transported in drums to a supply shed, where the paint pumps are placed over them.

Standard and special colors are continuously circulated through feed lines to and from each spray booth. At these booths the operator can switch from one color to another by changing the fluid line at the spray gun.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For further data on any product mentioned in PRODUCTS FINISHING, use Postpaid Card inside front cover.

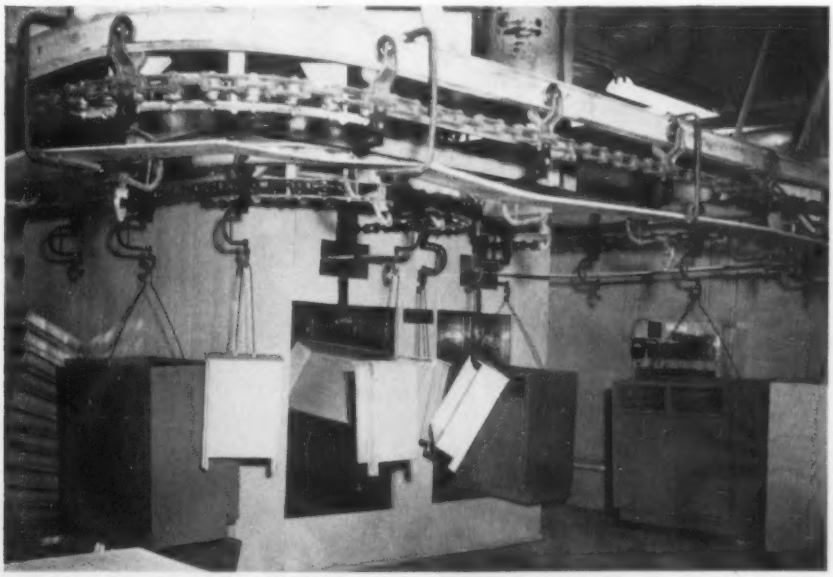
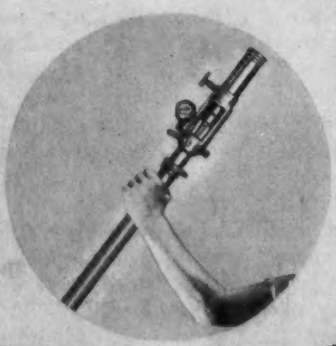
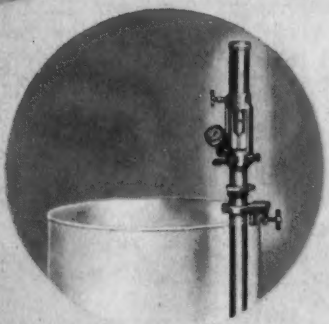


Fig. 5—Prime-coated parts enter double-tunnel oven (foreground) as finish-coated parts emerge (rear). (Photographs courtesy Metalab Equipment Company, Div. of Norbute Corporation, Hicksville, L. I., N. Y., and Shell Chemical Corporation, New York 17, N. Y.)



LIGHTWEIGHT—easy to remove from emptied drum and insert in new drum.



VERSATILE—auxiliary clamp lets you operate from rim of open drum.

MOUNTS WITH AGITATOR — portable drum cover lets you combine mixing and pumping operations.

All New... from Binks

17½ lb. material handling pump supplies up to 4 spray guns

Binks new "Pogo" bung-type air-operated material handling pump is a "lightweight" in pounds only. In all other respects it is a rugged, dependable performer. It cuts your material handling costs by letting you send paints and coatings direct from original shipping drum to your spray guns. The pump has plenty of power to supply up to four spray guns . . . either directly or through a paint circulating system.

Fits 2" bung hole. No longer need a 2" opening be a production bottle-neck. Binks "Pogo" pump puts the contents of a 55-gallon drum at your disposal. Delivers at the rate of one gallon per minute — enough to operate four spray guns simultaneously! At no time is the drum itself under pressure.

Operates from open drums. Attach an auxiliary clamp and the Binks "Pogo" pump is ready for use on the rim of an open drum. Where you must keep your materials constantly mixed, an agitator may be mounted with the pump on a portable drum cover. A wide variety of pump and agitator mounting combinations is available.

Economical to operate — maintain. Long, double action pump strokes insure steady delivery and they make maximum use of operating air. Rugged construction insures perfect, long-life alignment of moving parts — reduces wear. The pump needs no lubrication. Spaced design separates motor from pump — positively prevents fluids from entering critical air motor parts.

For complete information ask your Binks industrial distributor for a copy of Binks Bulletin 707. Or if you prefer, write direct to the address below.

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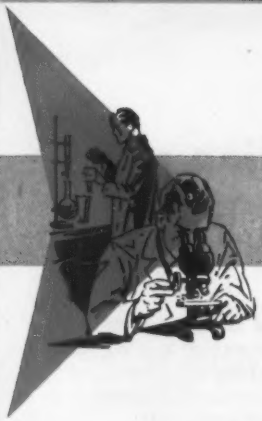


finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Etching and Color Anodizing

Question: *I would appreciate any information you can give on etch anodizing or on lettering on anodizing in multicolor process.*

W. W. T.

Answer: The process of making nameplates includes that of preparing a drawing or photograph which is finally reproduced on a sensitized glass negative. The image on the negative is next transferred to a chemically treated zinc plate or "master plate" used to print sheets from which metal etchings are made. Printing presses pick up impressions from these zinc master plates and reproduce these impressions on polished aluminum or any other metal which is to be used to make the nameplates. Regular printing presses are used for this operation.

Plates which are to be etched are printed with a non-drying black printing ink. These plates are then dusted with asphalt powder which clings to the powder formed by non-drying printing ink. Plates are next dusted with French chalk to remove the excess asphalt powder and then cleaned of adherent particles with compressed air. Plates are then passed through a gas fired oven to fuse the asphalt powder and form a protective coating over the design so that it will not be attacked by the etching solutions. Backs of metal sheets are painted with liquid asphaltum which is allowed to air dry.

Plates so prepared may be etched, after which the various stop-off coatings are removed by solvent treatment and mechanical means.

The same general technique is followed for aluminum anodizing. The plate must be printed, the design must be protected with a stop-off material of some type, anodized, colored and sealed. When more than one color is to be applied, the entire cycle of operation has to be repeated for each color.

We are referring you to sources from whom additional information may be secured.

★ ★ ★

Paint Tumbling Barrels

Question: *I am a reader of your magazine and would like some information on paint application.*

Do you know of any paint tumbling barrels on the market and, if so, would you send me the names and addresses of their manufacturers? We have a number of parts which we are now

racking and then spraying, which is a time-consuming operation.

We would like to just dump them into a barrel with a given amount of paint and paint them in this manner. We have heard that this can be done, but as yet have not found a company that makes such a barrel.

If you have any information on this method that you could send to us it would be greatly appreciated.

R. D. S.

Answer: In reply to your letter, paint tumbling barrels are made by companies listed under "Painting Equipment, tumble," in the 1957 edition of the PRODUCTS FINISHING DIRECTORY. We are listing some of these companies, who will be able to supply the information you need about this process.

★ ★ ★

Sludge Elimination

Question: *We are paint dipping the sealer coat on machine tool castings after they have been snagged and cleaned. Some of these castings weigh 1600 pounds.*

The tank is four feet wide, six feet long and five feet deep. We keep 500 gallons of paint in the tank for dipping.

We have found that a sludge accumulates in the bottom of the tank, and, as we have safety dumping valves into underground tanks, this sludge could stop the valves from operating.

We would like to know where we could obtain information for keeping paint in suspension, and the best methods for agitating.

E. G. B.

Answer: We are referring you to companies who can give you information on the proper methods for agitating the paint in your paint dipping tanks.

You might also wish to consider installation of equipment for filtration of the paint in your tanks, and we are also suggesting companies from whom you will be able to secure information on filters and filtration methods.

★ ★ ★

Silk Screen Painting Equipment

Question: *Can you tell us the name of a firm that manufactures silk screen painting machines for the screening of cylinders?*

An article giving this information was printed in your magazine some time ago. We will appreciate any information you can give us.

D. G. K.

Answer: We are forwarding a copy of the 1957 edition of the PRODUCTS FINISHING DIRECTORY which lists the companies who manufacture the type of equipment in which you are interested.

★ ★ ★

Hard Chrome Plating, Electropolishing

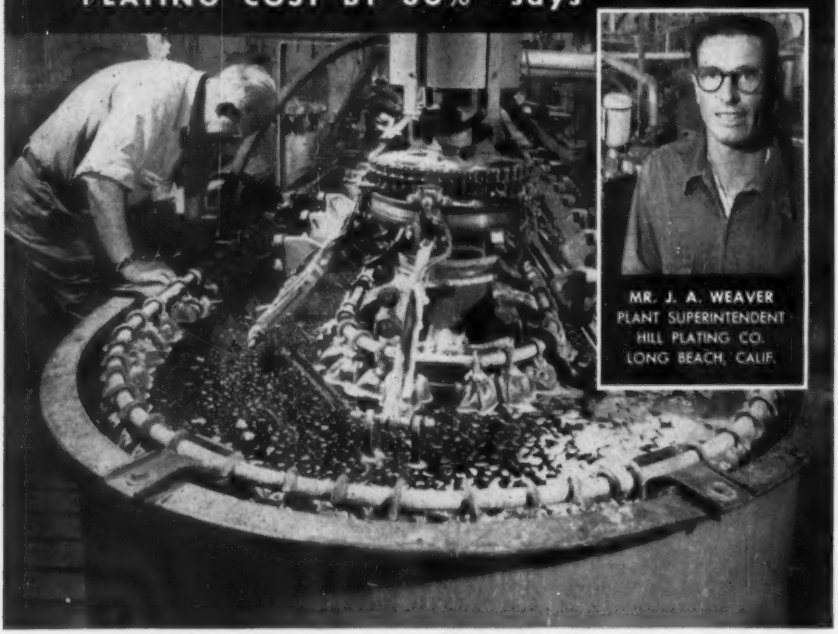
Question: *We would appreciate any information or literature available in regard to hard chrome plating of dies and molds. We would also like information on electropolishing of steel in a sulfuric-phosphoric acid type bath.*

A. P. T.

Answer: We are sending you tearsheets of the article "Hard Chrome Plating Made Easy," which was published some time ago in PRODUCTS FINISHING. Some information on electropolishing processes may be obtained from the reprint "Surface Finishes for Stainless Steels" (copy enclosed).

We are also referring you to sources from whom additional information on electropolishing may be obtained.

"THIS STEVENS MACHINE LOWERED OUR PLATING COST BY 30%" says



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LONG BEACH, CALIF.

"...and *tripled* our man-hour production rate!"

The Hill Plating Company has discovered that their installation of a STEVENS "Little Steve" Automatic Plating Machine, has not only done away with the usual problems of hand line operating . . .

IT HAS ALSO . . .

- Lowered unit costs
- Met all production requirements with ease
- Released workers for other inter-plant tasks
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And, along with these economical developments, the Hill Plating Company is now enjoying the even balance of production and labor that *only* accompanies automatic plating!

If your present method of plating is keeping your processing costs up, why not let your local STEVENS Sales Representative show you the *profitable* way to increase production!

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ALKALIES Caustic Soda, Trisodium Phosphate

ALKANOLAMINES Diethanolamine, Di-Tri-Isopropanolamine, Monoethanolomine, Monoisopropanolamine, Triethanolomine

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NAVAL STORES Dipentene, Pine Oil, Turpentine, Gum & S.D. Wood, Rosins, Gum & Wood, Modified Rosins, Resinates

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Brighter Prospects for Brass and Copper

Recently introduced process for cleaning brass and copper produces good surface for subsequent painting or plating . . .

By DR. PAUL H. MARGULIES
Becco Chemical Division
Food Machinery and Chemical Corporation
Buffalo, N. Y.

PREPARATION OF COPPER AND BRASS products for finishing can now be done by using a cleaning process that replaces the usual hot acid pickle with a brief dip in a room-temperature bath of ammonium persulfate. The procedure removes oxide films and stains and leaves a clean metal surface. Products so treated will not tarnish over a period of about two weeks. The slight etch imparted to the surface makes the process of definite merit to prepare for painting, electroplating, and dip-soldering. Its bonding properties make it attractive for laminating and the application of the photo-resist coatings used in making printed circuits.

This surface-cleaning or pickling process was recently developed in the research laboratory of Becco Chemical Div., Food Machinery and Chemical Corp., Buffalo, N. Y.

It used to be customary to use a hot acid pickle to remove oxide films and stains. It is now possible to do this by dipping the copper and brass products in a 25 per cent solution of ammonium persulfate, at ordinary room temperature.

The clean and slightly etched metal surface which results from the brief immersion recommended —10 to 60 seconds—will not tarnish over a period of as much as two weeks, in normal factory environment. Where tarnish-proofing is the only objective, 15 to 30 seconds of treating time are sufficient. Where a deeper etch is desired, the treating time may be as long as two minutes.

After cold-water rinsing and air

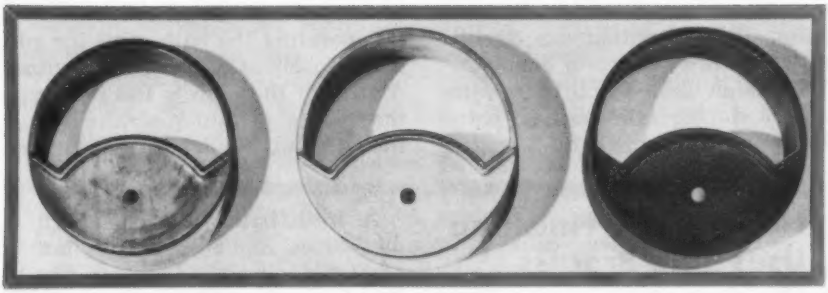

Fig. 1 — Brass meter cases before cleaning (left), after dipping in ammonium persulfate (center), and after painting (right). Note slight etch imparted by the persulfate dip (center). (Photographs courtesy Becco Chemical Division, Food Machinery & Chemical Corporation.)

drying immediately following the pickling bath, the metal surface is ready for the specific finishing job intended.

The slight etch produced by the persulfate bath improves the bonding properties of the metal for laminating and photo-resist coating. This etching effect of the cleaning bath suggests the application of the process also for stripping thin copper or brass deposits from metallic or non-metallic supports and for printed-circuit etching.

Only minute amounts of metal have to be removed to produce the desired effect. The amount of metal removed is too small to be significant, (0.00005 to 0.0001 inch per minute), even when treating thin metal foil.

Preparing the Bath

The pickling bath is prepared by dissolving 1½ to 2 pounds of ammonium persulfate in one gallon of warm tap water. Very little stirring is required, since ammonium persulfate is highly soluble. At first the bath has a pH of 3.5 to 4. It remains fairly stable for 3 to 5 days. In continuous operation, ammonium persulfate is consumed at a rate depending on the area of metal surface put through the bath. One gallon of treating solution can handle approximately 100 square feet

Fig. 2—Vernon Berg places basket of brass meter cases into ammonium persulfate bath. Dip lasts 30 seconds to 2 minutes, operates at room temperature, requires no exhaust.

of metal surface. Theoretically, each gallon of the solution can dissolve up to about 7 ounces of copper.

Although bath stability is satisfactory during idle periods, better economy is effected by avoiding prolonged periods of idleness and by operating the bath until the pH drops to about 1.5 to 2. Analytical control of the bath is not required; the pickling results obtained and the pH will usually be satisfactory

How Abbey Finishing Uses This Process

"It's the best process we have found to achieve good painting results in finishing brass products," says Leonard Jaxon, vice president in charge of production at Chicago's Abbey Finishing Co., a custom-finishing plant.

Mr. Jaxon was speaking of the process described in this article, which was recently introduced by the Becco Chemical Division of Food Machinery and Chemical Corporation, Buffalo, N. Y.

Abbey Finishing, one of the first companies to try the Becco method, uses this cleaning process to prepare brass and copper products for painting, and finds that good paint adhesion can be obtained even without a primer.

The procedure followed by this "job shop" is simple. Parts are vapor degreased, then loaded into stainless steel baskets and dipped into a bath of ammonium persulfate at room temperature. Immersion time is 30 seconds to two minutes, depending upon the surface quality and degree of etch desired. Then the basket is lifted out, the parts are rinsed and dried, and they are ready for painting. That's all there is to it.

A fresh batch is mixed each day, since replenishment is not advisable, once the bath has lost its effectiveness. The bath is prepared by dissolving two pounds of ammonium persulfate in each gallon of tap water. At Abbey Finishing, 15-gallon batches are mixed.

The solution is used at room temperature, although the exothermic reaction that takes place during the cleaning process may raise the temperature almost to the boiling point. The rise in temperature does not interfere with the working of the process, however, and the time between successive baskets of parts is usually sufficient to allow the bath to cool.

Abbey uses this process to clean radio cabinet grilles, metal screens, meter cases, instrument covers, light shields, test units and aircraft thermostats.

The Chicago firm foresees greater use of brass products as a result of this process, since the excellent base provided for painting will make it practical to use brass for many items where ease of formability and low cost are advantageous, but where brass has not been used in the past because of the difficulty in getting good paint adherence.

indications of the bath's condition.

Sequence of Operations

In most cases, the metal to be pickled will require degreasing in the usual manner. Although no rinse is required after solvent degreasing, it is recommended after alkaline degreasing.

After the degreasing operation, the metal is immersed, at room temperature, in the pickling solution for periods ranging from 10 to 60 seconds, depending on the degree of etch desired. If an especially deep etch is required, treatment time may be as long as two minutes.

It is usually desirable to agitate the bath slightly during treatment, except for batches which are dipped for only 15 to 25 seconds. For these, the immersion and withdrawal generally provide sufficient agitation. Where treatment is continuous, the passage of the work through the bath accomplishes the same result.

Proper rinsing is important to prevent surface staining of the metal during drying. After the metal is removed from the bath it is rinsed with cold water to remove all of the highly soluble reaction products and the residual treating solution. High-pressure spray-rinses are not too effective, especially for work with perforations and recessed areas. More effective are counter-flow rinse-tanks where the work can be flooded with a relatively large volume of water flowing at medium velocity. The rinsed work should be air-dried at room temperature. Heating to speed drying must be avoided; too rapid drying will cause staining.

Handling equipment is relatively inexpensive. Wooden tanks may be used. Stainless steel, stoneware and plastics of the Lucite type are also satisfactory. For continuous processing of metal in sheet or wire form, tanks with stainless steel or non-metallic guide rolls are used.

Fig. 3—Parts are lowered by crane into vapor degreaser after cleaning in persulfate bath and water rinsing. Hot vapors dry the parts.

Fig. 4—After parts have been dried, they are painted in this dry-type booth. Note paint arrester units (rear), which trap overspray.

SPOTLIGHTING finishing progress

The Role of Oxygen in Iron-Enamel Adherence

Investigations conducted at the National Bureau of Standards reveal roles of furnace atmosphere and adherence promoters in porcelain enamel adherence . . .

Scientists believe that oxygen in the firing atmosphere of porcelain enameling furnaces plays a role in the adherence of such vitreous coatings to the metal. To obtain detailed information about the adherence mechanism, the National Bureau of Standards conducted a series of experiments. The oxygen content of the furnace atmosphere was varied while the same enamel containing varying amounts of an adherence promoter, cobalt oxide, was fired onto iron.

Results reveal that, for optimum adherence, any decrease of oxygen in the furnace atmosphere requires a corresponding increase in the amount of cobalt oxide in the enamel. Enamels containing 3.2 weight per cent or more of cobalt oxide develop a weak but definite bond in furnace oxygen concentrations as low as 0.02 mole per cent. But when smaller amounts of cobalt oxide are present, a greater oxygen content of the furnace atmosphere is necessary for appreciable bond development.

The study, which was carried out for the National Advisory Committee for Aeronautics by A. G. Eubanks and D. G. Moore of the Bureau's enameled metals laboratory, is one of a series of investigations at NBS aimed at obtaining a better understanding of the ceramic-to-metal bonding mechanism.

The equipment used at the Bureau (Figs. 1 and 2) to study the effect of oxygen consisted essentially of an air-tight inductively heated furnace into which metered quantities of oxygen and nitrogen could be admitted at known pressures. The specimens were fired inside the muffle at 1,550 deg. F. for a predetermined period.

Series 105

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Amer-Plate
PVC TANK LINING

	Yes	No
1. Will it adhere directly to concrete without costly metal interlining?	☐	☐
2. Will it withstand hard chrome liquor to 160° F.?	☐	☐
3. Is it unaffected by strong acids and oxidizing materials?	☐	☐
4. Is it resistant to highly corrosive salts?	☐	☐
5. Will it resist alkalis, including 50% caustic soda?	☐	☐
6. Is it insoluble in aliphatic alcohols, glycol and glycerine?	☐	☐
7. Is it impervious to diesel oil, sour crude, aliphatic petroleum hydrocarbons?	☐	☐
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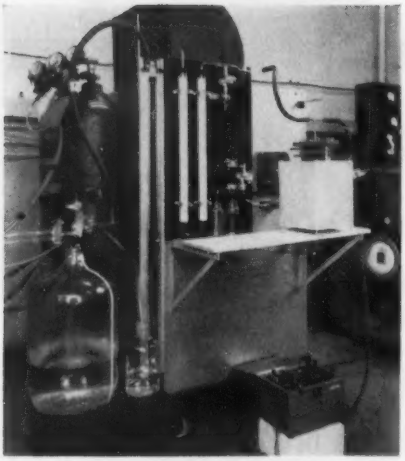

Fig. 1—Atmosphere-mixing and firing apparatus used to investigate the role of oxygen in the adherence of vitreous coatings to iron. With this apparatus, the oxygen content of the firing atmosphere can be varied.

The specimen blanks were of ingot iron, four by four by 0.047 inch, pickled and then coated with the enamel composition. Enamels contained varying quantities of cobalt oxide or cobalt oxide with manganese oxide, and were prepared according to standard procedures.

Adherence of the fired enamel to the specimen was evaluated with the Porcelain Enamel Institute adherence meter. When used according to the A.S.T.M. test procedure, this instrument establishes the fraction of the test area to which the coating continues to adhere after the specimen has been deformed in the prescribed manner.

A coating containing 0.4 per cent cobalt oxide (Fig. 3) developed its best adherence at an oxygen content of 20 mole per cent—approximately that of air — while enamels with higher cobalt oxide contents reached their peak adherences at about 5 mole per cent of oxygen. It was

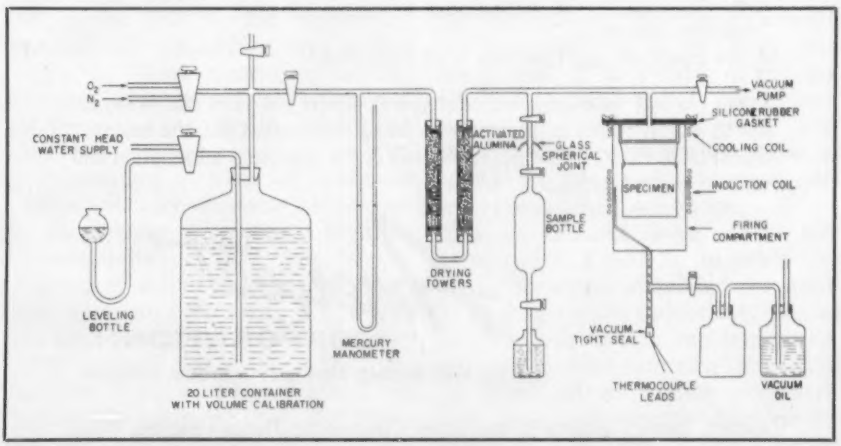

Fig. 2—Drawing: atmosphere-mixing and firing apparatus used at National Bureau of Standards

For more data on advertisement on opposite page circle 326 on Postpaid Card

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RELIABILITY—

"Quality that can be relied or depended upon."

(Webster's New International Dictionary)

CLINTON Reliability conforms to this definition—

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observed that enamels with larger amounts of adherence oxides do not require as much oxygen in the furnace atmosphere as those with smaller amounts; this observation indicates that oxygen can be supplied from the enamel itself. The conclusion here is that the cobalt oxide is in some way supplying or facilitating the supply of some of the oxygen, since the amount of cobalt oxide is the only difference between the coatings.

This conclusion is substantiated when the amount of cobalt oxide is plotted against adherence index for specimens fired in low oxygen concentrations. When the curves are extrapolated, they pass through the origin, thus indicating that cobalt oxide-free coatings have an adherence index of zero. With increasing cobalt oxide, however, adherence index increases accordingly.

Table I

BASIC COMPOSITION OF FRIT USED FOR PREPARING VARIOUS GROUND COATS

(A) BATCH COMPOSITION

Material	Parts by weight
Potash feldspar	30.82
Borax (hydrated)	44.25
Flint	30.50
Soda ash	9.16
Soda niter	5.15
Fluorspar	8.30
	128.18

(B) COMPUTED OXIDE COMPOSITION

Oxide	Per cent by weight
SiO_2	51.0
B_2O_3	16.1
Al_2O_3	5.7
Na_2O	15.4
K_2O	3.5
CaF_2	8.3
	100.0

Table II

MILL BATCH USED FOR PREPARING GROUND-COAT SLIPS

(Milling time, 3 hr.; fineness, 10g on 200 mesh from 50 ml of slip)

Material	Weight, g.
Frit	1,000
Enameler's clay	60
Borax	10
Water	425

Metallographic sections were prepared of representative specimens. These showed that the adherence increased with increasing roughness of interface between enamel and iron. Earlier investigations at NBS have shown this same type of roughness-adherence correlation. The roughening of the metal has been shown to occur during firing by what is believed to be a galvanic corrosion mechanism. The cobalt ions present in the coating layer tend to plate out of the molten enamel electrolyte onto the more electronegative areas of the iron surface as metallic cobalt. The tiny galvanic cells thus formed cause selective etching of the iron surface if the specimen is fired in an atmosphere containing a sufficient amount of oxygen.

Little or no selective etching will occur where there is insufficient oxygen present to promote the corrosion of the exposed areas of the

FOR FAST, ECONOMICAL

BUFFING AND POLISHING—

ATLANTIC

GREASELESS COMPOUNDS

NEW PLASTIC CONTAINER—

ELIMINATES COMPOUND WASTE

REDUCES APPLICATION TIME

Here's a new waterproof plastic container for Atlantic Greaseless Compounds that saves time and money on buffing and polishing operations. Now, there is no need for operator to spend time stripping away cover . . . plastic container wears away as stick is applied to spinning buff. And, costly waste is reduced since container exposes only the compound that is in contact with the buff. Standard aluminum tube and foil-lined fibre board container available if desired.

Atlantic Compound combines continuous research, high grade materials and rigid quality control of manufacturing to assure you of a product with extremely high uniformity.

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THE ATLANTIC COMPOUND CO.

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iron. However, the oxygen required for the corrosion process does not necessarily have to come from the furnace atmosphere. If easily reducible oxides are present in the coating layer, then selective corrosion of the iron can still occur even in a furnace atmosphere that is substantially free of oxygen.

Interface roughness, however, does not completely account for adherence: poor adherence has been observed on very rough interfaces. Also, fairly good adherence has been obtained on alloys without surface roughening. Although the observations made in the present study can be explained on the basis of the galvanic corrosion theory, further work is needed to uncover and to isolate the other active mechanisms in the adherence of vitreous coatings to metals.

Adapted for publication in PRODUCTS FINISHING from National Bureau of Standards Technical Report.

★ ★ ★

Guide to Atomic Energy Literature for the Civilian Application Program. This 74-page booklet describes the technical information publications and services offered by the Atomic Energy Commission and tells how and where to obtain them. The Guide may be obtained by asking for TID 4575. Write to Technical Information Service Extension, P. O. Box 1001, Oak Ridge, Tenn.

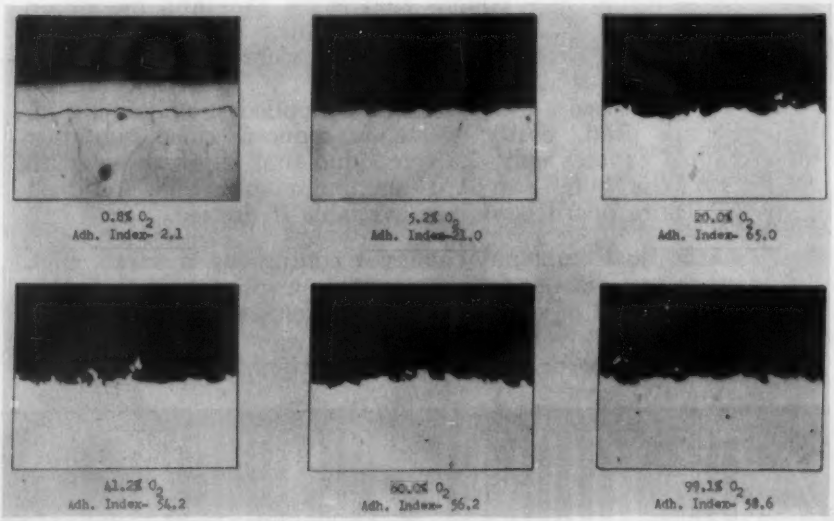

Fig. 3—Micrographs of coated iron specimens showing effect of oxygen content of furnace atmosphere on surface roughness for a coating containing 0.4 per cent cobalt oxide by weight. Coating on specimen fired in atmosphere with 0.8 mole per cent oxygen flaked from metal during cutting operations. Section was subsequently nickel plated to preserve interface. Magnification, 900 X. (Photos courtesy National Bureau of Standards.)

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with

RAP® TANK SOLVENT #52

Efficiency Proved Through Daily Use in Many Major Installations

As illustrated RAP Tank Solvent #52 thoroughly cleans conveyor hooks (racks or baskets) with no line down-time. It excels in all other applications, such as removing Scotchlite or Prismo, baked enamels and lacquers etc.

RAP Tank Solvent #52 is: fast and sure, non-flammable, non-caustic, practically odorless, practically non-toxic and will not harm aluminum.

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RAP Metal Bond: Safe and sure for the preparation of metals before painting (iron, steel, galvanized, aluminum, etc.). . . also removes rust.

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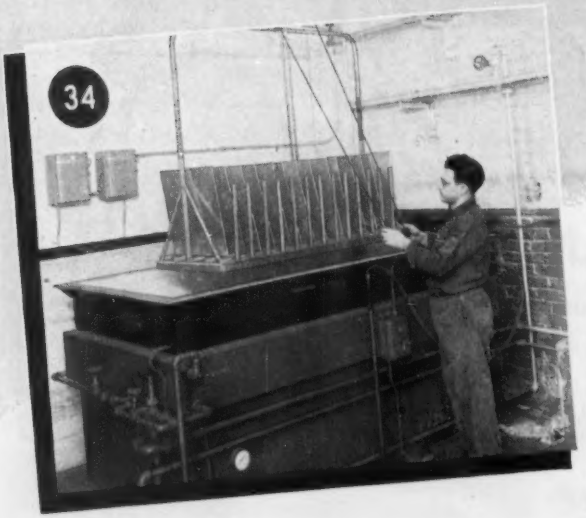
Here's how a PHILLIPS DEGREASER gives a super clean metal surface . . . Assures better adhesion of reflective sheeting to railway signs.



Phillips Model 84 vapor degreaser at the Great Northern Sign Shops cleans metal signs of all sizes quickly and efficiently. Chemically clean surface makes for excellent bonding of reflective sheeting.

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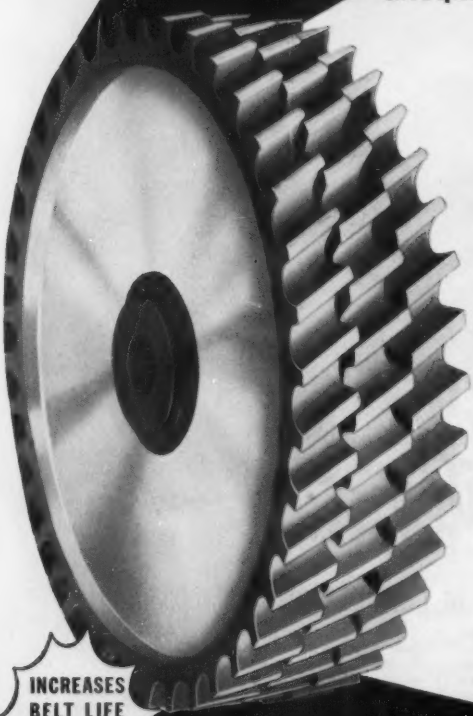

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- INCREASES BELT LIFE up to 200% and better — P duction tests prove it. With deep grooved R-58, t belt becomes self-cleaning. It "shells out" and p vents glazing.
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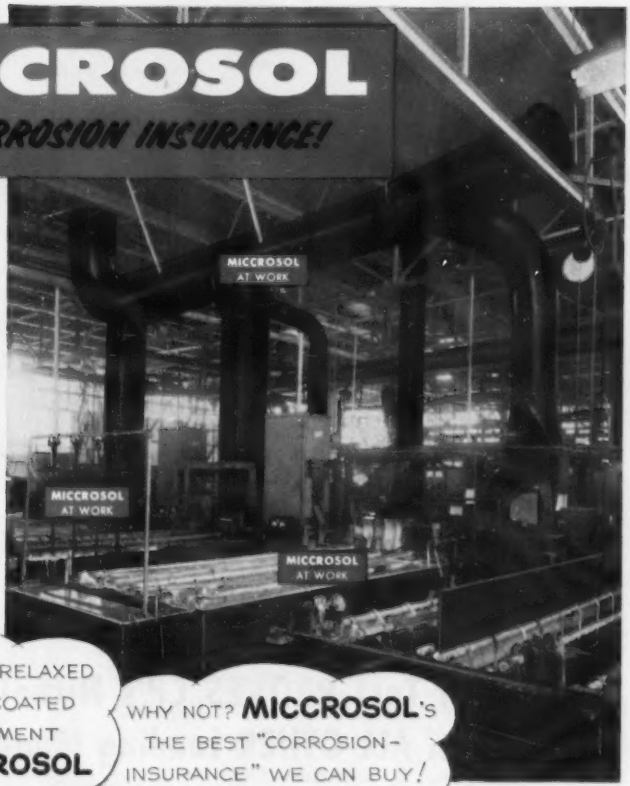

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WHY NOT? MICCROSOL'S THE BEST "CORROSION-INSURANCE" WE CAN BUY!
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Long the leading coating for plating racks, Miccrosol has kept pace with corrosion-resistance requirements for other industrial applications.

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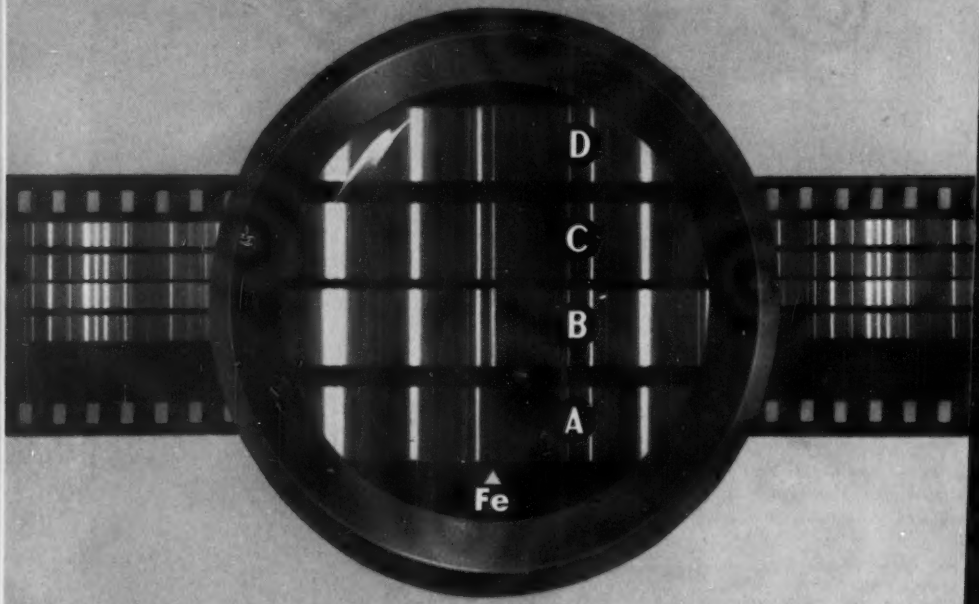
NICKEL SULPHATE



Test After Test PROVES CP's Nickel Sulphate Purer Than ALL OTHER Leading Manufacturers!

In every important category—purity, ease of use and price—CP's Nickel Sulphate gives you benefits far superior to other brands.

For example: The factual and dramatic photograph above offers proof of the purity of our Nickel Sulphate. We had a series of spectrographic tests made using actual production samples of three leading brands plus our own (A). Not only is there a *difference* in purity, but in two cases it is substantial!

If you have never tried our Nickel Sulphate, why not do so now. It consists of fine, uniform, quick-soluble crystals of 22% nickel; has a special non-caking feature and our prices are equal and, in some cases, lower than other brands. Packaged in 6-ply moisture resistant bags. Send for a free test sample, no obligation of course.

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Prevent corrosion & protect metals without painting

- Lithoform® Z for zinc
- Alodine® 1200 for aluminum
- Permadine® for steel

Lithoform Z forms an amorphous chromate coating on zinc and cadmium surfaces which retards the formation of *white rust* or *bloom*. It is effective on most types of electro-deposited zinc, zinc die casting alloys, hot-dipped galvanized surfaces, and cadmium plated products.

Alodine 1200 forms an amorphous chromate film on aluminum which becomes an integral part of the metal and improves the natural corrosion resistance of the metal. In addition to protecting unpainted surfaces, it is a durable and tenacious base for paint.

Permadine—a heavy zinc phosphate coating chemical—forms an oil-adsorptive crystalline coating on steel. When used with such oils as Granoleum,® it provides excellent corrosion resistance.

Write for complete information about these ACP corrosion preventives

AMERICAN CHEMICAL PAINT COMPANY, Ambler 14, Pa.

DETROIT, MICHIGAN • ST. JOSEPH, MO. • NILES, CALIFORNIA • WINDSOR, ONTARIO

CHEMICALS ACP PROCESSES

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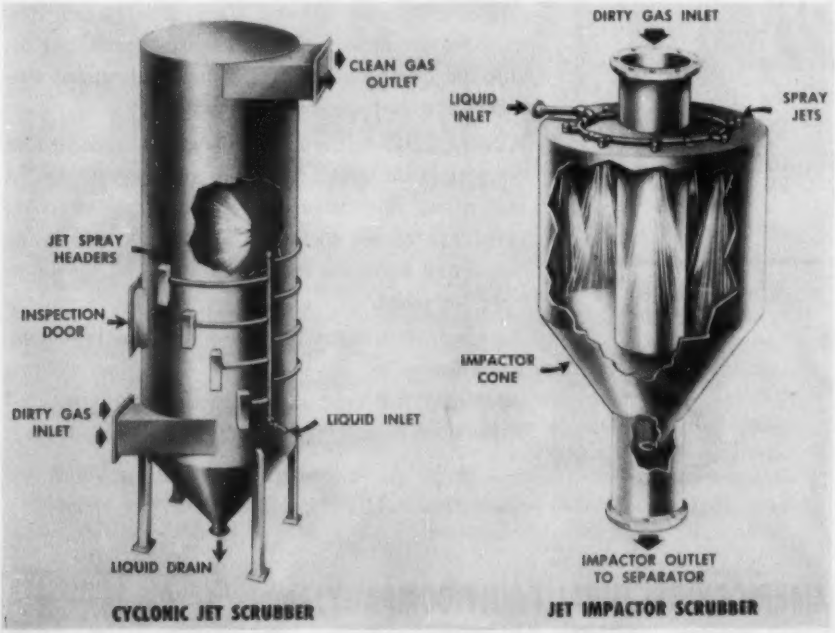
New Equipment, Materials, Processes

Polishing, Buffing, Degreasing, Cleaning, Barrel Finishing, Plating, Anodizing, Phosphatizing, Baking, Vacuum Metalizing, Chromate Coatings, Paint Finishing, Waste Treatment

Dust and Mist Collectors

Manufacturer: Automotive Rubber Co., Inc., 12550 Beech Rd., Detroit 39, Mich.

Equipment: Two air scrubbers, a Cyclonic "Jet" type to handle dust and liquid aerosols that are a micron in size or larger (principally those de-



Two Wet-Type Gas Scrubbers: left, Cyclonic "Jet" Scrubber; right, "Jet" Impactor Scrubber

New **DESPATCH** *installation*

Finishing EDSELS for Lasting Elegance!

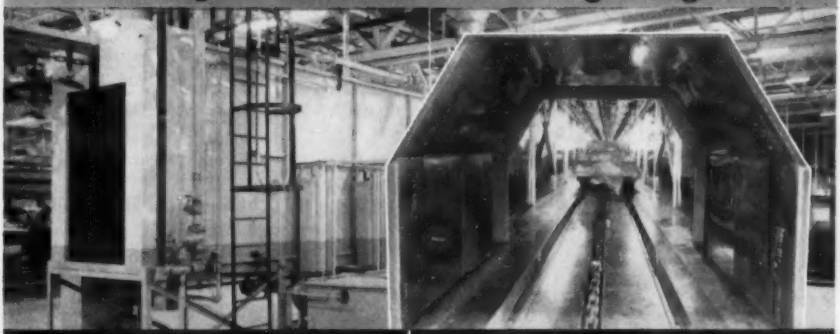


Photo shows entrance to flow coater for finishing Edsel parts.

This inset photo shows exit of final car repair bake oven.

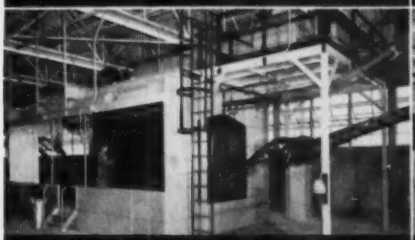


Photo shows water wash spray booth for painting frames.

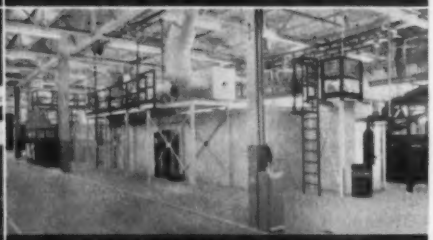


Photo shows oven used in baking finish on Edsel wheels.

"Once you've seen it, you'll never forget it." That's what they're saying about Edsel . . . the exciting new member of the Ford family of cars . . . for plenty of reasons. Edsel's classic vertical grille . . . low wide flight deck . . . new V-8 engines . . . steering-wheel Teletouch Drive . . . self-adjusting brakes . . . just to mention a few features.

. . . and s-a-a-y . . . those elegant colors . . . like being kissed by a rainbow! Durable colors . . . to brighten the highways season after season.

Finishing Edsels is the exacting result of research and production experience of the company's engineers . . . plus technical assistance and equipment from experts like DESPATCH in the field of products finishing.

Latest equipment used in Edsel paint application . . . such as spraying or flow coating . . . and modern bake ovens for wheels or entire automobiles . . . are shown above in photographs of the new DESPATCH installation at the Ford Motor Company's Edsel Division, Rosemead Plant, Los Angeles, California.

Maybe you are launching a new product? Or wish to pep up appearance of an existing product? Whether you sell industry or Mr. and Mrs. Consumer, let DESPATCH's experience in evaluating, recommending and creating completely engineered finishing systems help solve *your* particular problems. There's a DESPATCH-trained resident engineer near you!

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veloped from mechanical disintegration—dusts), and the "Jet" Impactor type, to handle fumes, fogs and mists that are submicron in size (most fumes of this type are produced by chemical and metallurgical operations, where volatilization or combustion occurs). Bulletin 957, available from the manufacturer, gives complete data.

Sizes: 500 to 20,000 c.f.m. capacity.
Typical Applications: Polishing and plating operations.
For more data circle 1 on Reader Service Card

★ ★ ★

Color Control

Manufacturer: Bowles Printing Corporation, 75 Third St., San Francisco 3, Calif.

Material: Printed cardboard color cards used as standards.

Description: Printed cardboard cards, matched to the various colors being used by the finisher, provide a permanent means of checking to see that the color being produced is consistent and uniform over a period of time. The cards are said to maintain their color in the absence of light over long periods of time. Each standard is a separate unit that can be used for checking an individual color without being influenced by surrounding colors, and is meant to be used only once. Each card is enclosed in a black envelope.

Applications: Controlling colors used in finishing any product; quality control in checking paints and coatings

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- Labor saving
- Automatic unloading
- For single or multi-stage operations
- No nesting of parts during cleaning or conditioning cycle
- Adjustable capacities to 10,000 lbs. per hour

The versatile new Simplicity VIBRA-WASHER, revolutionary machine for washing and conditioning of small metal parts, stampings and castings, employs a vibrating work carrier that automatically conveys parts through cleaning or conditioning bath. Solution is forced around parts, even into blind drillings and slots. In single stage, VIBRA-WASHER removes chips, oil and grease quickly . . . economically. In multi-stage, several units in line will provide cleaning, rinsing and phosphating, eliminating "between-stage" handling. Write today for Bulletin 107, to: Industrial Washer Division.

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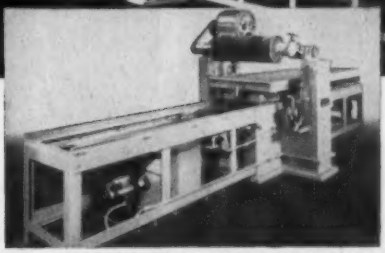
For cut down and finishing of sheets, plates, extrusions, trim, etc.



SINGLE ROLL HORIZONTAL MACHINE
Hydraulically operated, with patented hydraulic contour device. Tables on all machines may be oscillated sidewise.

- *FASTER*
- *MORE EFFICIENT*
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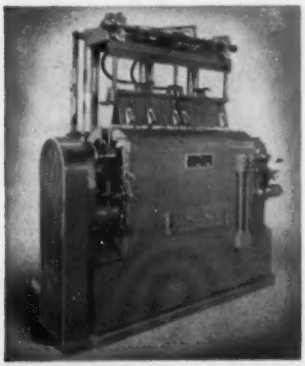
For cutting costs, improving quality and speeding up your finishing operations on sheets, plates, extrusions, rods, tubing, auto trim and many odd-shaped pieces, Central Polishing Machines will meet every production requirement as they have done so successfully wherever they have been installed.



VERTICAL POLISHING MACHINE
2 sizes, 18" and 36" stroke. Hydraulic contour device. Gives a high finish to many odd-shaped pieces.

Horizontal Machines are built in single and tandem roll models, 30", 40" and 50" widths, in any length. Are hydraulically or electro-hydraulically operated from a central operator's station and equipped with our patented hydraulic contour control. Stroke adjusted from 2" to full capacity in stepless increments. Tandem rolls permit cut down and finishing operations with one set-up.

Vertical Machines are available with 18" or 36" stroke. They are fast, economical and easy to operate. Patented hydraulic contour device permits finishing many different shapes such as hardware items, handles, cutlery, auto and appliance trim, escutcheon plates, etc. Central Vertical Machines may be set in batteries where a sequence of operations is desired. Conveyor systems and fixtures can be furnished.

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when purchased; and to send to the paint manufacturer for his use in matching a given color.

For more data circle 2 on Reader Service Card

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Aerosol Stop-Off

Manufacturer: Krylon, Inc., 18 W. Airy St., Norristown, Pa.

Material: A clear lacquer that is sprayed on from an aerosol can to protect plating racks from plating solutions, prevent build-up of deposits on areas where no plate is desired. Dries quickly, sprays on quickly. A fast method of applying stop-off.

For more data circle 3 on Reader Service Card

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Portable Ultrasonic Cleaning Unit

Manufacturer: Acoustica Associates, Inc., Mineola, N. Y.

Description: Model DR 50-AH Ultrasonic Cleaning Unit, a portable model.

Construction: Includes generator, transducers, tank. Tank made of heavy-gauge steel with rounded corners for easy cleaning. Tank is 9 inches high, 5¾ inches wide, 5¾ inches deep, holds ½ gallon. Has outlet tap for hookup with external recirculating filter or temperature control system. Generator is 10 inches high, 7 inches wide, 10½ inches deep.

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FLOCKING MACHINE

A Standard Unit For A Variety of Flocking Needs

Now, with a new PECO, you can quickly add extra beauty and sales appeal, dampen sound and vibration, or add an inexpensive flock coating to your product. Especially designed for small lot or medium production spray-coat work, the PECO is quality built to assure dependable results.

EASY TO OPERATE—finger-tip feed control on discharge nozzle, built-in air blower, 110-volt plug-in connections.

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QUICK-CHANGE DUMP HOPPER — saves time, eliminates waste when changing colors.

REGULATED, EVEN FLOW—nylon brush feed, adjustable baffle control, and protective screen assure smooth results without wasting flock.

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FREE BULLETIN—Outlines simple operating details, gives complete data! Or for help with any problem our 25 years of specialized experience is available to you.

TYPICAL APPLICATIONS

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- FOR SOUND AND VIBRATION DAMPENING—of metal, wood or plastic materials for interior panels, grilles, phone booths, etc.
- FOR MAR-PROOFING—lining tool or tackle boxes; jewelry, silverware and optical cases; base-coating lamps, desk sets, etc.

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8629 Mackinaw at Grand River
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BUILDERS OF STANDARD & SPECIAL FLOCKING EQUIPMENT

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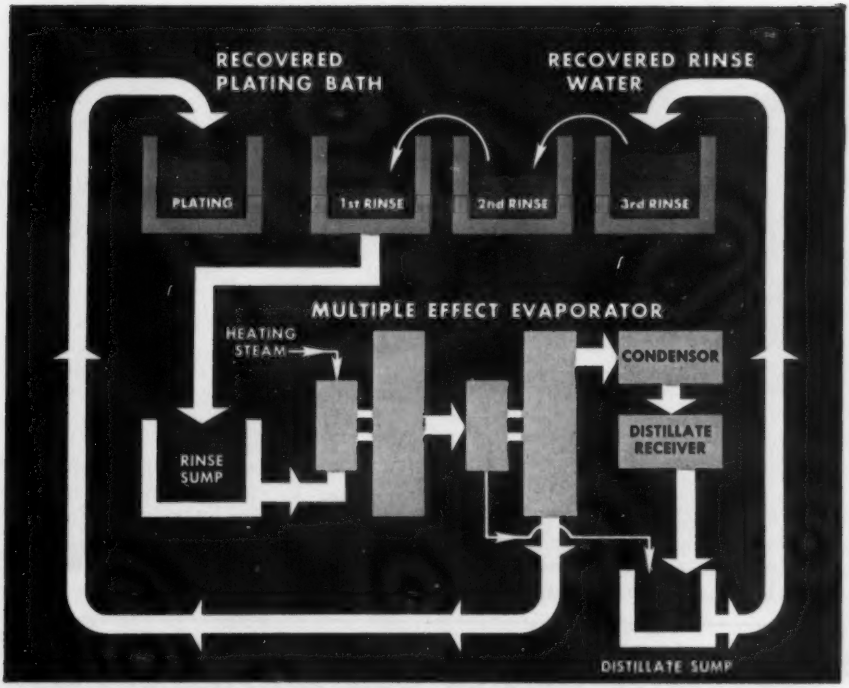

New recovery system cuts plating costs!

Industrial's Plating Bath Recovery Equipment provides complete recovery of acid and metal drag out losses, using a rapid evaporation process engineered to suit your operation. The savings can be fantastic . . . the system not only returns fresh plating solution to the bath and pure water to rinse tanks . . . it eliminates the high cost and trouble of neutralizing corrosive rinse water for disposal. In a typical case the replacement of solution and destruction of rinse water cost $12.46 per hour. **The Industrial System recovers the bath at a cost of $2.13 per hour.**

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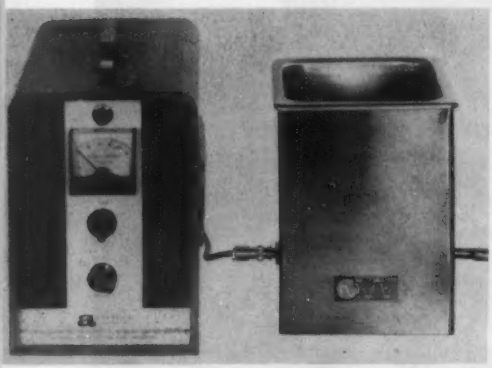

Acoustica Portable Ultrasonic Cleaning Unit

silicon wafers, hollow needles, tyro components, gears, ball bearings, machined or cast parts, jewel watch parts, lenses, meters, relays, surgical instruments and similar intricate objects; rapid decontamination of radioactive parts and assemblies, rapid removal of excess solder flux, etching resists, finger prints, polishing compounds, lint, waxes and other soils from relays, printed circuits, ceramics, glass, lenses, jewelry and other items.

For more data circle 4 on Reader Service Card

★ ★ ★

Abrasive Belt Tracking Device

Manufacturer: Timesaver Sanders, P. O. Box 7446, Robbinsdale Station, Minneapolis 22, Minn.

Equipment: An automatic air-operated tracking device for use on the company's 40- and 50-inch models of abrasive belt polishing machines. Available for certain models that are now in use.

Operation: Movement of the belt in

To page 82→

50 TIMES LONGER WEAR! WORKLON

Acid and Caustic Resistant INDUSTRIAL APPAREL

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SAVINGS UP TO 93%

Worklon work clothes resist punishing acids and chemicals . . . actually outlast cotton and wool garments by 50 to 1 as proved in on-the-job tests under corrosive chemical conditions. No need for constant replacement of acid-damaged uniforms! Worklon apparel wears far longer, saves you as much as 93% in work clothes costs!

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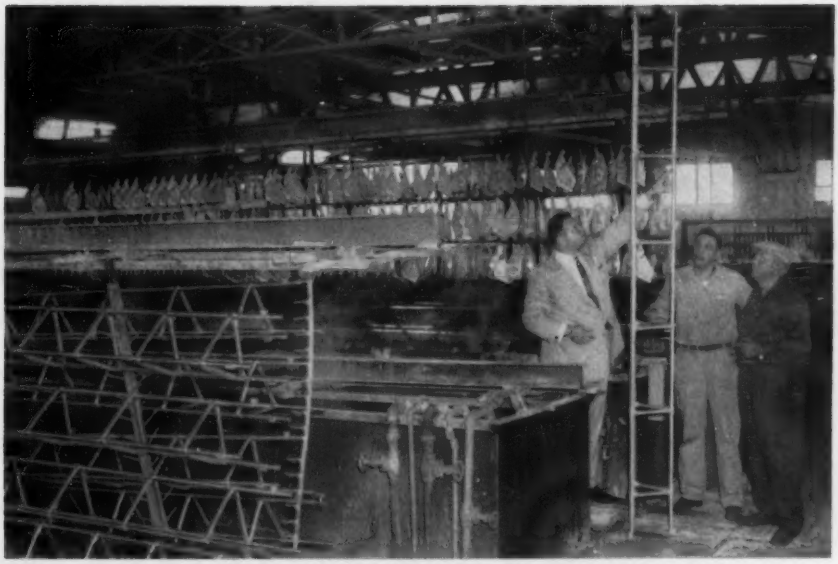

Messrs. Nick and Dick Servatius of Modern Plating Corp., Freeport, Illinois, and Ed Wild, Ardco, Inc., are enthused over the results obtained with ROHCO 503 ZINC BRIGHTENER.

"ROHCO® 503 *is ideal for our two 6,000 gal. zinc tanks...*"

Modern Plating Corp. has grown to be one of the largest as well as progressive plating shops in the Midwest . . . with 42,000 sq. ft. of floor space under one roof devoted to plating and rustproofing. Their large semi-automatic zinc line consists of 15 tanks—25 ft. long, 6 ft. deep and 5 ft. wide. It enables them to handle parts up to 24½ ft. long. After experimenting with various zinc brighteners and addition agents, they have adopted ROHCO 503 Brightener. It enables them to produce zinc plating of unsurpassable quality and brightness with the minimum of effort and expense. In their unusually large plating tanks, Modern Plating Corp. claims ROHCO 503 Zinc Brightener contributes maximum satisfaction to the customers and profit to the plater.

Find out how 503 and other ROHCO Addition Agents will do wonders in your plant!

ROHCO

DISTRIBUTORS AND STOCK POINTS: CHICAGO, ST. LOUIS, Ardco, Inc. • TORONTO, CANADA, Armalite Company, Ltd. • LOS ANGELES-SAN FRANCISCO, Crown Chemical & Engineering Co. • NEW ENGLAND, NEW YORK, PENNSYLVANIA, Enthone, Inc. • MINNEAPOLIS, W. D. Forbes Co. • BINGHAMTON, Austin F. Fletcher, Inc. • OREGON, WASHINGTON, Great Western Chemical Company • DALLAS and DAYTON, R. O. Hull & Company, Inc. • DETROIT, George L. Nankervis Co.

R. O. HULL & COMPANY, INC.

1304 PARSONS COURT • ROCKY RIVER 16, OHIO

For more data circle 341 on Postpaid Card

The ONLY Buyer's Guide to the Finishing Industry!

FULL-YEAR COVERAGE

at lower per thousand cost than any monthly publication . . . regular or directory issue!

MOST EFFECTIVE

for manufacturers *and* distributors DISPLAY *and* CLASSIFIED

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COMPLETE DIRECTORY

"Your DIRECTORY is very useful"

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"A useful tool"

"Very good DIRECTORY"

"It's a good handbook"

"I get a lot out of your publication"

opportunity! Whether manufacturer or distributor, you can use Display or Classified advertising to reach a guaranteed circulation of over 21,000 . . .

MORE CIRCULATION
. . . in the plating field !
MORE CIRCULATION
. . . in the painting field !
At LOWEST COST
. . . per thousand !

INDUSTRY-ACCEPTED buying source for information on . . . EQUIPMENT, MATERIAL and PROCESSES for:

METALLIC COATINGS
- Electroplating
- Vacuum Metalizing
- Galvanizing
- Hot Dip Tinning

NON-METALLIC COATINGS
- Paint — Varnish
- Lacquer — Enamel
- Porcelain Finishing
- And other finishes

Products Finishing DIRECTORY'S *exclusive* Distributor Listings supply the last and very important link in the sales chain. They tell readers "Where-to-Buy." Both classified and display advertising is available to distributors at regular rates.

Products Finishing DIRECTORY is a 13th edition in addition to regular monthly issues. The DIRECTORY can be used individually or in combination with monthly issues to earn attractive four, seven or thirteen-time rates.

Products Finishing DIRECTORY closes Feb. 15th for publication, March, 1958

products finishing directory

431 Main Street Cincinnati 2, Ohio

either direction off center actuates controls which automatically put the belt back on center. Device operates automatically. Mounted behind the sanding drum, belt distortion is kept to a minimum.

For more data circle 5 on Reader Service Card

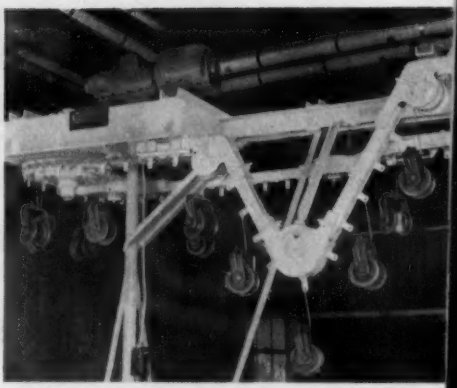
★ ★ ★

Overhead Chain Conveyor

Manufacturer: Vern G. Ellen Co., 2741 Rippe Lane, Minneapolis 27, Minnesota.

Equipment: The Vernoflex Chain Conveyor.

Features: Easily installed; abrupt horizontal and vertical turns are possible, including 90-degree vertical rises and dips and 2-inch-radius turns; all parts totally enclosed; chain is automatically lubricated; single or multiple drives are used, depending on length of conveyor and load per foot; system may be run at any speed desired.

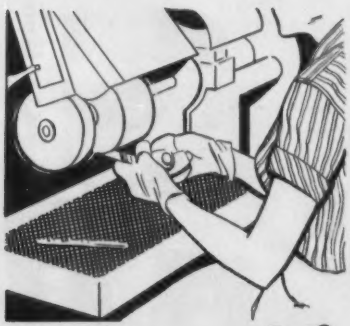


Vernoflex Lightweight Overhead Chain Conveyor: abrupt horizontal and vertical turns

Applications: Handling parts in assembly, through caustic and pickling solutions, paint dipping, oven or infra-

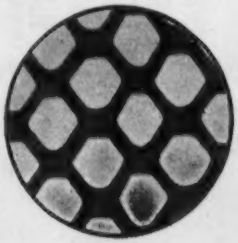
PROTECT FINE PLATED SURFACES

with **RP** *Neotex*



Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

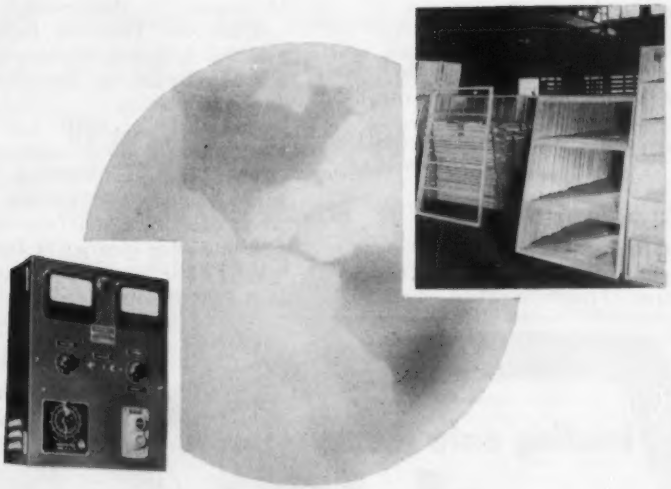
RP *Neotex*



RESEARCH PRODUCTS CORPORATION

Dept. 76, Madison 10, Wis.

For more data circle 343 on Postpaid Card



"There's a world of difference in Anodizing when you have Automatic Current Density Control" . . .

. . . says John Gurniak of

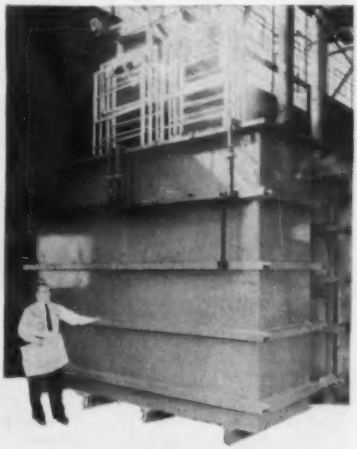
MICHAEL FLYNN MFG. CO., PA.

"and that big difference is the accuracy and simplicity in which a pre-determined film thickness can be controlled."

"We chose RAPID ELECTRIC'S Automatic Current Density Control rectifiers to eliminate the problem of estimating current densities with each load change. One setting, and the rectifier automatically maintains a constant current density per square foot of work."

"It's that easy".

"Once more, with the possibility of over-current virtually eliminated, MICHAEL FLYNN'S high standard of quality is assured."



THE NAMEPLATE THAT MEANS *"More Power to You!"*

RAPID ELECTRIC COMPANY

12838 Fenkell Avenue • Detroit 27, Mich. • Diamond 1-8537

2881 Middletown Road • New York 61, N. Y. • TAlmadge 8-2200

For more data circle 344 on Postpaid Card

red drying, spraying, rinsing, and other operations where an overhead conveyor can be used.

For more data circle **6** on Reader Service Card

★ ★ ★

Zinc and Aluminum Cleaners

Manufacturer: Allied Research Products, Incorporated, 4004-06 E. Monument St., Baltimore 5, Maryland.

Materials: Cleaners especially formulated to prepare zinc die castings and aluminum for chromate coatings or electroplating.

Descriptions: ARP 140 Zinc Die Cast Cleaner is a non-etch anodic cleaner that contains an inhibitor which enables it to produce a fine etch when used as a soak cleaner, without current. This cleaner is free rinsing.

ARP 150 Aluminum Etch Cleaner is a non-dusting, free-flowing cleaner that uniformly etches all aluminum alloys. A simplified control method for this cleaner assures uniform etching at a controlled rate and prevents the bath from reaching the point where it no longer can hold aluminum in solution.

ARP 160 Non-Etch Cleaner for aluminum is a powder that provides a clear solution when made up. Removes ink markings, cleans polished parts without harming the gloss.

ARP 170 Aluminum Deoxidizer is formulated to dissolve smut and oxides on wrought alloys with a minimum of attack on the aluminum. It has a self-regulating formula that pre-

leading auto manufacturers
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QUARTZ
OVENS
Here's Why...
CLEPCO Quartz Paint Ovens are based on the use of special CLEPCO Quartz Heaters designed to emit that part of the heat spectrum most readily absorbed by paints.
Another major auto manufacturer reports that CLEPCO Paint Ovens are lower in original cost as well as in operating costs than the conventional gas fired convection ovens previously in use.
CLEPCO'S Complete Research Facilities are at your service to determine the most efficient quartz oven for your requirements.
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THE CLEVELAND PROCESS COMPANY
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CLEPCO
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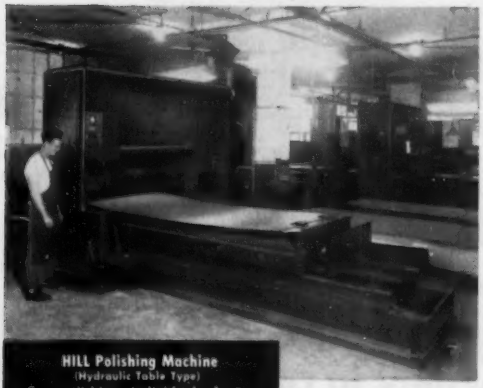
HILL GRINDING AND POLISHING MACHINES
For FINISHING
Any and All
FERROUS and NON-FERROUS MATERIALS . . .



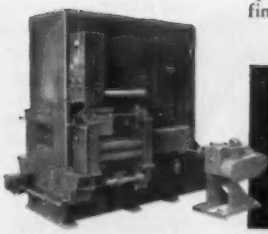
HILL Polishing Machine
(Hydraulic Table Type)
For polishing individual sheets and plates. Hydraulic reciprocating table with centralized controls.

The basic HILL two-roll vertical head with upper steel idler roll and lower rubber covered contact or work roll (both dynamically balanced) over which the endless abrasive belt travels.

FLAT surfaces of ferrous or non-ferrous material can be brought quickly to the high finish so necessary for today's industrial and consumer products. The dairy, automotive, home appliance and engraving industries are typical of the wide range of application for these precise, labor saving machines.

HILL abrasive belt grinding and polishing machines are built in two general types. The hydraulic reciprocating table type polished individual sheets and plates. Table widths vary from 36″ to 60″. Table lengths range from 60″ to 240″. The Pinch-Roll type is for progressive line polishing. The HILL two-roll vertical head with endless abrasive belt is the basic principle common to both types.

When writing for information please indicate size and specifications of stock to be finished.



HILL Grinding and Polishing Machine
(Pinch-roll Type)
For pre-finishing, conditioning and polishing. Used as single units or in multiple units for progressive line polishing in wet or dry operations.

HILL ACME TOOLS FOR INDUSTRY

THE HILL ACME COMPANY

HILL DIVISION
ESTABLISHED 1882
1201 West 65th Street • Cleveland 2, Ohio

"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING • THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

For more data circle 346 on Postpaid Card

vents passivation even after extended periods of immersion.

All of these cleaners are supplied as powders, and all contain water-conditioning, anti-foaming and anti-caking agents.

For more data circle 7 on Reader Service Card

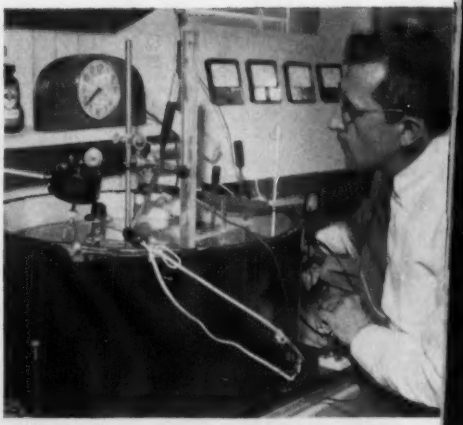
★ ★ ★

Stress-Determination Instrument

Manufacturer: Joseph B. Kushner Electroplating School, 115 Broad St., Stroudsburg 5P, Pa.

Equipment: An improved model of the Stresometer, an instrument that measures residual stress in electrodeposited metals.

Features: A special depth gage permanently attached to the body of the instrument speeds calibration of the testing discs and makes possible determination of stress in a plating solution within 15 minutes, depending upon the current density used and the deposit thickness at which the result is desired.



Stresometer being used in inventor's lab

IMPROVE FLOW-COATING WITH BENDIX ULTRA-VISCOSON

Keep paint at the right viscosity for flow-coating appliances, automotive parts or countless other products with Bendix Ultra-Viscoson*. This electronic viscometer automatically controls the addition of solvent to the supply tank as well as indicates and records continuous viscosity readings. Operates on any type of flow-coating equipment. *REG. U.S. PAT. OFF.

- Eliminates "ORANGE PEEL" appearance due to high paint viscosity.
- Eliminates STREAKS due to low paint viscosity.
- Minimizes REWORK, resulting in COST REDUCTION.
- Improves UNIFORMITY and QUALITY.
- Proportions of PAINT and SOLVENT held to close tolerance.

Cincinnati Division, Dept. 390, 3130 Wasson Road, Cincinnati 8, Ohio.
Export Sales: Bendix International Div., 205 E. 42nd St., New York 17, N.Y.
Canada: Computing Devices of Canada, Ltd., Box 508, Ottawa 4, Ontario.

Cincinnati Division

Bendix AVIATION CORPORATION

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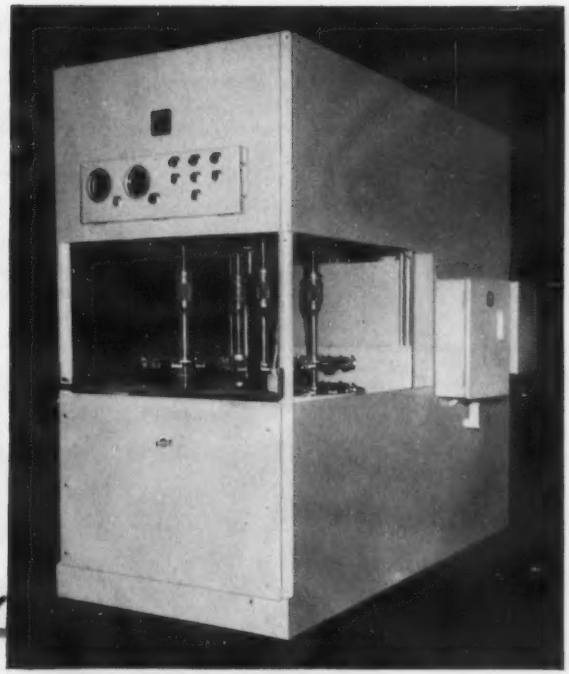
TUMBLE
GRAV-I-FLO
FINISH

OFFERS

Spin-Finish



AN ENTIRELY NEW PARTS-FINISHING PROCESS

***Replaces* hand and automatic buffing!**

- One-operation finishing of most complex parts
- Completely dry process . . . no lubricants
- Dust and fume free . . . no exhaust systems
- No set-up time required

Sets New Standards In Pre-Plating Finishing Costs

Wipe the slate clean of all present concepts of speed, efficiency and costs in pre-plating finishing of brass, zinc-base and aluminum die-cast parts! In one short, automatically-timed operation—and on a *multiple mounting* of parts—new SPIN-FINISH produces surfaces and lustre equal to or surpassing that of buffing. Write for information.

GRAV-I-FLO CORPORATION

Dept. PF-1, 400 Norwood Avenue, Sturgis, Michigan

For more data circle 348 on Postpaid Card

Capillary tube on instrument is now completely recessed in the high-temperature plastic column, so that it cannot be damaged by careless handling. Special cell is available to permit determination of stress in quantities of solution as small as 250 cc., under controlled conditions. Additional data available from the manufacturer.

For more data circle 8 on Reader Service Card

Aerosol-Packaged Paints

Iridescent metallic finishes that produce foil-like surfaces and fluorescent colors that have good wearing qualities and color retention on outdoor signs are decorative aids available in push-button spray packages.

The metallic finishes, which provide a sparkling, smooth, uniform finish that lends the feeling of a coating of extremely fine particles of colored metal, are useful on ornamental articles. They are supplied in eight different colors.

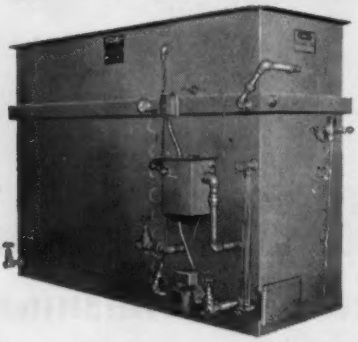
The fluorescent paints, commonly used by commercial artists and hobbycrafters, are recommended for signs, displays, decorations and safety markings. They are also available in eight different colors.

Pressurized packaging in self-spraying containers makes both types of paint products easy to use. They are ready for use at the press of a button. Dispensing pressure in the containers is provided by a liquefied Du Pont "Freon" propellent.

"Spark-L" Iridescent Metallic Finishes are a product of Illinois Bronze Powder Co., Inc., 2020

Circo Vapor Degreasers use 30% less solvent

NEW DESIGN



MODEL OP2

New, modern Circo vapor degreasers — whether large or small — are engineered to save on solvent consumption. Construction features like balanced condensing coils, leak-proof pumps and dual vapor-level control are today saving companies 30% and often more in solvent use. Circo degreasers perform faster, save precious man-hours through engineering designs developed through 30 years experience in vapor degreasing.

CIRCO PRODUCTS for METAL CLEANING

Phosphatizing Units
Metal Parts Washers
Industrial Ovens
Spray Pickling
Flow Coating
Complete Systems
Vapor Degreasers

Send for Circo's comprehensive 32-page Manual on Vapor Degreasing. No Obligation.

SINCE CIRCO 1923

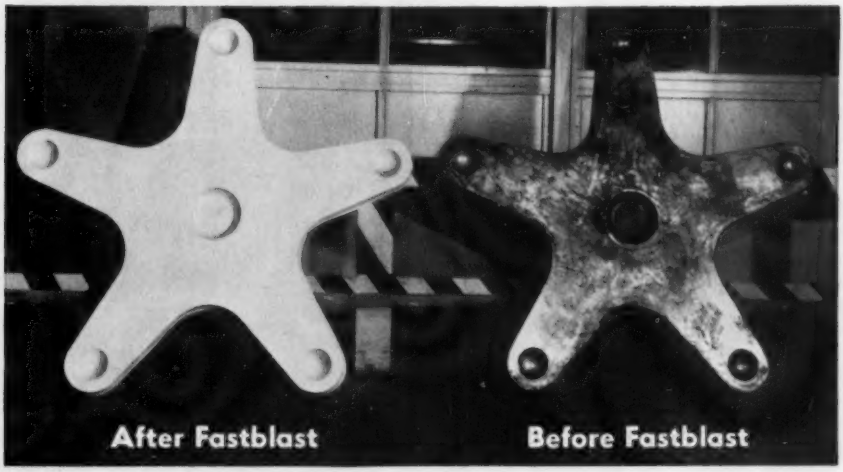
EQUIPMENT COMPANY

124 Central Avenue, Clark (Rahway), New Jersey — Offices in Principal Cities

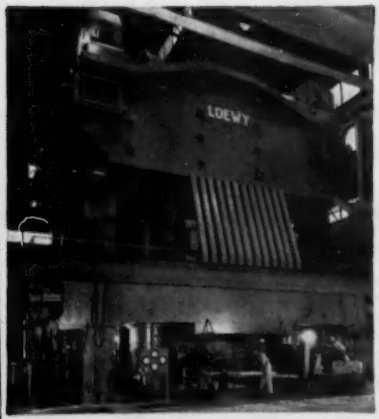
PER-SOLV (Perchlorethylene) CIRCO-SOLV (Trichlorethylene)

For more data circle 349 on Postpaid Card

Clean Forgings Fast with Exolon Fastblast

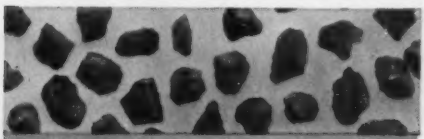


Wyman-Gordon Company cleans Helicopter Hub Rotor Magnesium Forgings by pressure blasting with Fastblast



Above: Forgings were produced on this 50,000 ton 10 story high press at Wyman-Gordon — USAF North Grafton, Mass.

These forgings covered with grease and graphite are cleaned quickly by air pressure blasting. Exolon Fastblast, a strong sharp clean 100% new aluminum oxide blasting grain is used. It is free from weak particles and "lazy" fines — breaks down slowly — reclaim value is high. Write for literature.



Above: Photomicrograph shows tough, hard grains of Fastblast.

The EXOLON Company

943 East Niagara Street • Tonawanda, N. Y.

Manufacturers of SILICON CARBIDE and ALUMINUM OXIDE ABRASIVES

For more data circle 350 on Postpaid Card

South Clark St., Chicago 16, Ill.

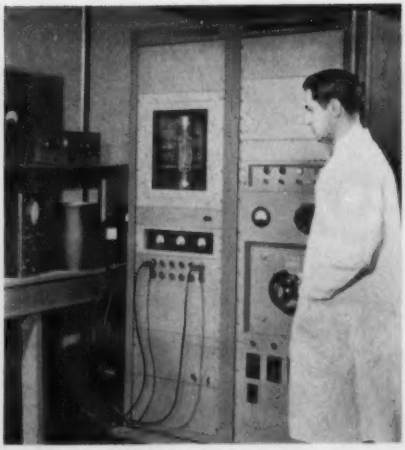
"Velva-Glo Qwik-Spray" Sun-Tested Fluorescent Colors are a product of Radiant Color Co., 830 Isabella St., Oakland 7, Calif.

For more data circle 9 on Reader Service Card

★ ★ ★

Ultrasonic Equipment

An ultrasonic amplifier-generator capable of producing 1500 watts has been developed by Designers for Industry, Cleveland, Ohio. Called "Vari-Sonic" this equipment was developed for the company's own use to provide high power and continuous variability over a wide frequency range. The equipment has been designed to protect itself and the transducer from damage caused by improper techniques or unexpected overloads. The Vari-Sonic principle permits relatively efficient transfer of energy in processes in which the load imposed on the transducer is variable.



"Varisonic" Ultrasonic Amplifier-Generator

DONT' BUY INFRA-RED OVENS *Blindfolded*

See—through a test in your plant—how temperature is controlled accurately at any level you wish by dri-Quik. See how you get an even field of heating energy. No bulbs or sockets to burn out.

driQuik *brings*

FIELD TEST EQUIPMENT

right into your plant

Don't buy blindly from a catalog. Our laboratories are equipped to make any tests that you wish, but we believe it important to have one of our highly trained representatives bring test equipment into your plant so that you can see exactly what it will do with your products and your personnel. No charge or obligation for this service which *only* driQuik provides.

driQuik DIVISION

DRY CLIME LAMP CORP.
GREENSBURG, INDIANA

For more data circle 351 on Postpaid Card

WE'RE NOT

Boasting-

just d--- enthusiastic

WHEN WE SAY THAT THE

GREAT RESPONSE

and DEMAND for

"Phosteem"

has been phenomenal

There must be a reason!—it's the big Economy in Equipment Investment Costs and Labor Saving in this Low-Cost Quality Method for CLEANING and PHOSPHATING METAL SURFACES for PAINTING

• What are you producing: Cabinets, Busses, Air Conditioners, Farm Implements, Caskets, Bulky Equipment, etc.—High or low production—Quality standards high? PHOSTEEM is adaptable to all of these requirements . . . (And, by the way, also approved by many paint companies.)

SEND TODAY FOR
PHOSTEEM BULLETIN 55-137

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METALPREP
GALVAPREP
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PREP-N-COTE
AND OTHER
Metal Conditioning
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products for
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Allentown, Penna.
Los Angeles, Cal.
Windsor, Ontario

For more data circle 352 on Postpaid Card

This equipment is recommended for use in cleaning, thickness testing and electroplating. Write for Technical Bulletin "Ultrasonics." Designers for Industry, Inc., 4241 Fulton Parkway, Cleveland 9, Ohio.

For more data circle 10 on Reader Service Card

★ ★ ★

Aluminum Bright Dip

Manufacturer: MacDermid, Inc., Waterbury 20, Conn.

Material: Aluminum Bright Dip No. 2.

Properties: Produces brilliant luster on non-silicon aluminum alloys. Produces good surface for anodizing. May be used to deburr aluminum chemically. Contains wetting agent. Fully described in Technical Data Sheet No. 21, available from the manufacturer.

For more data circle 11 on Reader Service Card

Laboratory Burner

An electrical "burner" for use in the laboratory has been introduced by Gardner Laboratory, Inc., Bethesda 14, Md.

Electrical Lab "Burner"

Called the "Electrothermal Bunsen," this heater for test tubes and other laboratory vessels consists of a specially formed replaceable heating element mounted in the top of a vertical tube, inside a supporting case. This casing has air-circulation holes in the lower part, and a concentric gap between the heating elements and the casing prevents undue temperature rise.

fine
with the PARAMOUNT
"Finishing Touch"
"To achieve a fine finish on beautiful sterling silver flatware, you start with a smooth, uniform surface," says Gorham Mfg. Co., leading silver–and goldsmiths. "To eliminate major defects in the metal before final finishing, we've found that the most efficient method is to use Paramount Felt Bobs with a mixture of fine pumice and oil. Paramount felt wheels and bobs are ideal for polishing flatware and holloware. Easily formed and having an affinity for pumice and oil, they produce a better surface than any other buff."
For fine, basic finishes, quality manufacturers depend on Paramount Wheels and Bobs. Join the leaders – specify Paramount. Call your supply house today!
Paramount
Felt Wheels, Bobs, Sheet Felt
Bacon Felt Co. 447 West Water St., Taunton, Mass.

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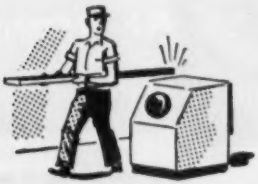
How many places can you use push-button touch-up?



Damage to the finish of your product happens anywhere—from your own assembly department to the final customer. With the Sprayon Self-Spraying Touch Up Tool *any* employee quickly repairs the damage *right where it happens.* Costs go down. Eye-appeal of your product and customer satisfaction go up! Sprayon goes right to your source for your own touch-up finish, custom loads the Tools for you under your own label. Exclusive Sprayon features mean even unskilled help do a factory-match job in minutes ...for pennies! It's a complete paint shop in a can!

Write for FREE touch-up folder.

Free training movie, "The Finishing Touch" (16 mm, sound, color, 11 minutes) Write for information.

SPRAYON *Self Spraying* TOUCH UP TOOL®

SPRAYON PRODUCTS, INC.

2077 East 65th Street • Cleveland 3, Ohio

For more data circle 354 on Postpaid Card

The heating element is shaped so that the heat is concentrated in the upper part of the cavity—the portion of the cavity in which the test tube rests during heating. A cowl at the top of the unit is designed to deflect heat away from the hand.

The small unit can be used for heating test tubes, crucibles, small flasks, and beakers, regardless of the shape.

Temperature is controlled by a continuously variable energy regulator. Range: 800-1000 deg. C. (element temperature).

For more data circle 12 on Reader Service Card

★ ★ ★

Transparent, Rust-Preventive Wrapper

Manufacturer: Nox-Rust Div., Daubert Chemical Co., 333 N. Michigan Ave., Chicago 1, Ill.

Material: A transparent Mylar packaging material that incorporates a volatile corrosion inhibitor. Can be sealed by heat.

Characteristics: Provides rust protection for several years. Has excellent transparency, permitting inspection of contents without removing from the package. Heat seals at 200 deg. F., under a pressure of five pounds per square inch. Good tensile strength.

Applications: For protecting iron, steel and aluminum products from moisture and corrosion.

For more data circle 13 on Reader Service Card

★ ★ ★

Sand Paper

Manufacturer: Armour & Company, Coated

COROCRETE...

Quickly and easily applied, COROCRETE offers the greatest floor surfacing protection available today. Corocrete is 4 times stronger than concrete . . . is resistant to impact and abrasion . . . sets up faster . . . and is guaranteed protection against acids, alkalies and solvents. COROCRETE is recommended in chemical and food processing, plating and metal working industries.

COROCRETE is an exclusive development of CEILCOTE . . . a name long recognized as leader in the corrosion industry. Write today for catalog!

COROCRETE CEILCOTE

another product of

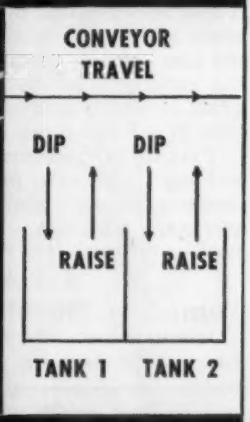
THE CEILCOTE COMPANY, INC.

4848 Ridge Road • Cleveland 9, Ohio

For more data circle 355 on Postpaid Card

CLEANING or PICKLING...

PRODUCTION and RESULTS UP



FLOOR SPACE and COSTS DOWN

with Cincinnati AUTOMATIC DIP-PROCESSING

If you're interested in dip-processing cleaning or pickling *in minimum space*, here's a production-proved solution that saves time, floor space and processing solutions. Straight-up, straight-down dipping of parts baskets traveling on a closed loop monorail conveyor means smallest possible tanks, important savings in floor space, too.

The operation is completely automatic, from first dip through conveyor unloading, can be used for any dip-processing sequence. In pickling processes, stainless steel, lead or rubber-lined tanks are provided.

For more information on this or a complete range of equipment for metal cleaning and finishing, write to: **Cincinnati Cleaning and Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio.**

For more data circle 356 on Postpaid Card

Abrasives Div., Alliance, Ohio.

Material: No-Load Finishing Paper, a coated abrasive paper that resists "filling" and "clogging."

Features: Flexible backing that prevents slipping in the operator's hands; binder adhesive that prevents shedding grain when sanding sharp edges; will not lose abrasive when moistened during sanding; electrostatically applied grain is said to add sharpness. Available in various types and grain sizes.

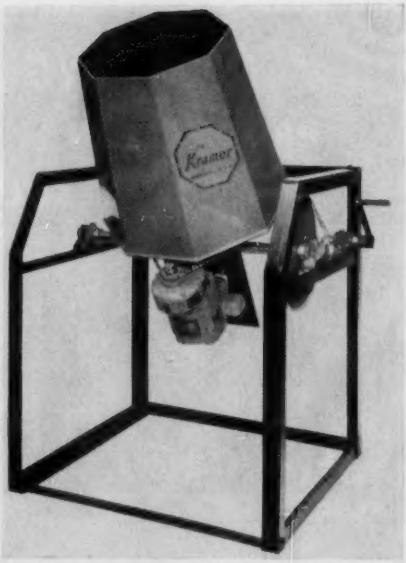
Typical Applications: For use in sanding undercoats, paints, varnishes, lacquers, enamels, shellac, sealers, primers, and surfacers.

For more data circle **14** on Reader Service Card

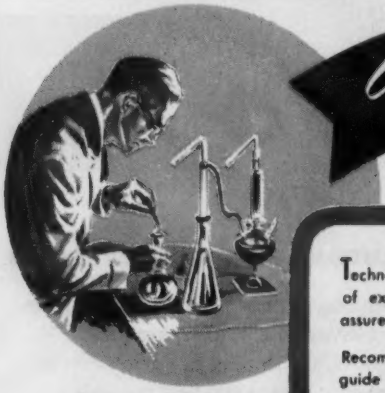
★ ★ ★

Tumbling Machine

Manufacturer: H. W. Kramer Co., Inc., 120-30 Jamaica Ave., Richmond



Kramer Tilting Open-End Tumbling Machine



Specialists in the Unusual

Rhodium

ELECTROPLATING SOLUTIONS

Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits...Can be applied in extremely heavy deposits, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

SINCE 1901

SIGMUND COHN MFG. CO., INC.

121 SOUTH COLUMBUS AVENUE · MOUNT VERNON, NEW YORK

Consult our staff, without obligation, about your specific plating problems.

For more data circle 357 on Postpaid Card

But it's not the whole story. For in addition to attractive appearance, an industrial coating must be high in protective quality. It must not only look well to help you sell your products . . . it must wear well to keep them sold.

Our development engineers appreciate this, and as a result, approach every industrial finishing problem with the same objectives in mind—beauty **and** utility. If the specific requirements of an unusual application cannot be met with an existing formula, our technicians, using the most modern laboratory equipment, will create an entirely new finish . . . proven both under actual field conditions and standard accelerated tests. As a result, the final coating is easy to use, appealing and long lasting.

Let us help you with the right answer to your finishing needs. A letter, telegram or telephone call will bring you our services. Definitely, no obligation.

UNIVERSAL PAINT & VARNISH INC.

BEDFORD, OHIO • Bo[illegible]9 • Call Bedford 2-2280

We eng[illegible] your finishing problems

For more data circle 358 on Postpaid Card

Hill 18, New York.

Equipment: Tilting, open-end tumbling machine.

Description: All-metal, water-tight barrel, octagon-shaped, can be lined with wood or plastic. Barrel can tilt a full 180 degrees, will lock in any position. Chain driven. Measurements: 18 by 24 by 25 inches.

Applications: Wet or dry tumbling of plastic or metal parts.

For more data circle **15** on Reader Service Card

★ ★ ★

Small Barrel Finisher

Manufacturer: Pako Corp., 1010 Lyndale Ave., N., Minneapolis 11, Minn.

Description: Small barrel finishing machine that can also be used to mix paints.

Construction: Available in two models: 58E, with an electric drive and speeds varying from 10 to 45 r. p.m., and 58A, with pneumatic drive and speeds of one to 60 r.p.m.

For mixing paints, the two racks of the mixer hold up to four paint rollers at a time, in each of which a one- or five-gallon container may be used.

For barrel finishing small parts, internally coated containers are available in three sizes. Up to six of these containers may be in operation at the same time.

For more data circle **16** on Reader Service Card

★ ★ ★

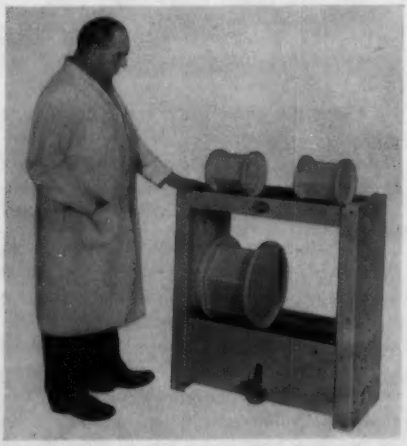
Sealing Compound for Anodized Aluminum

Manufacturer: Sandoz, Inc., 61-63 Van Dam St., New York 13, N. Y.

Material: Sandofix ALU, a sealing compound for anodized aluminum.

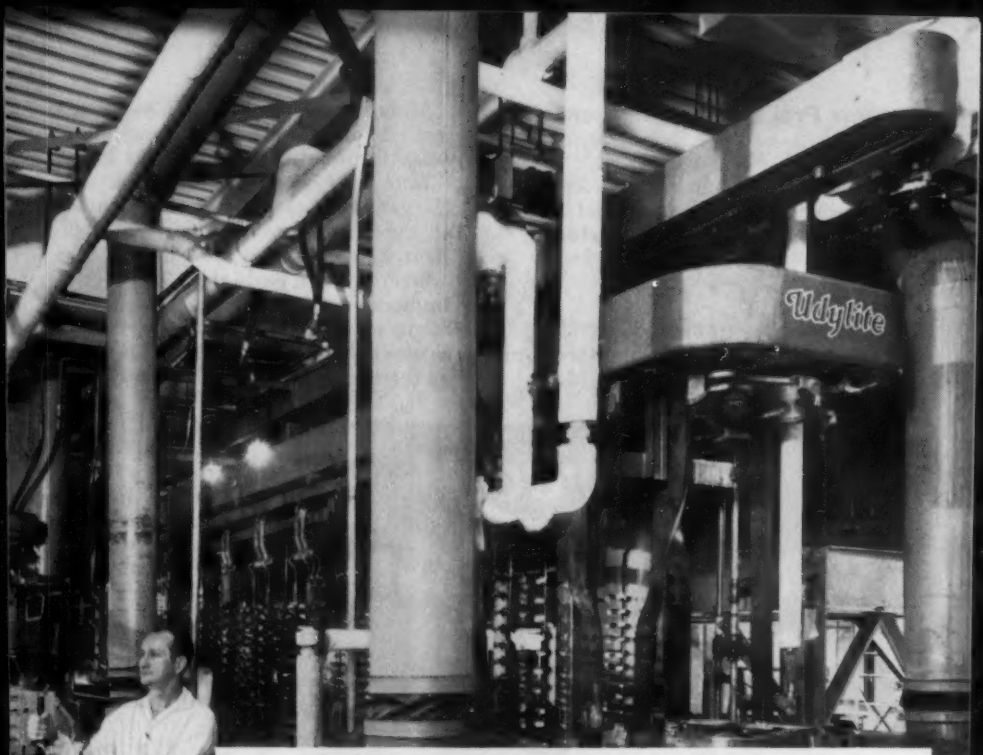
Properties: Eliminates post-sealing buffing and coloring of anodized products; improves appearance of products that cannot be buffed because of their shape; pH control of sealing bath is unnecessary under ordinary conditions; black-dyed anodized aluminum can be completely sealed without the appearance of smut; requires no change

Pako Multi-Purpose Unit being used for mixing a can of paint. It's also a barrel finisher.



Pako Multi-Purpose Unit being used for barrel finishing parts in several containers.

For more data on advertisement on opposite page circle 359 on Postpaid Card



Udylite Machine and Process combine to set new Scripto standards

The Udylite Cyclemaster provides the accuracy and steady flow of production. Udylite Bright Nickel furnishes the sparkling finish. Together they solve for Scripto, of Atlanta, Georgia, the knotty problem of better finish of the Scripto pens, pencils and cigarette lighters.

Scripto's first bright nickel was the Udylite #31 process. It was superseded by the Udylite #514 process to gain the faster brightening which is so important in nickel plating to a high luster with a thin coat.

The adoption of Udylite Bright Nickel Process #724 was the next step as it offered still faster brightening and even more important all the time saving advantages of all liquid brighteners.

Step by step Scripto has lowered costs and improved quality with Udylite Processes and Precision Automatic Plating. Here is just one of many examples of the right application of process and equipment. Out of the line of Udylite products can come the answer to your problem as well.

Contact your local Udylite Sales Representative . . . let him show you how the *right* combination of Udylite processes and machines can improve your quality and production.

THE **Udylite** CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST
PLATING SUPPLIER

in the normal anodizing procedure.

Technical information and samples available from the manufacturer.

For more data circle 17 on Reader Service Card

★ ★ ★

Zinc Conversion Coating

Manufacturer: Wagner Brothers, Inc., 400 Midland, Detroit, Mich.

Material: Iso-Lok ZDP, a powder that is mixed with nitric acid and water to produce a bright, clear finish.

Bath Make-Up and Operation: Add 1½ gallons of nitric acid and 3 pounds of the powder to water, using sufficient water to make 100 gallons of solution. Operate bath at 80-100 deg. F. Immerse parts for 5 to 25 seconds. Slight agitation. Add acid and powder as needed. Discard solution after two or three rejuvenation additions.

Typical Applications: Producing a bright clear finish, without leaching, in processes where maximum corrosion resistance is secondary to bright finish. Can be used on barrel or rack-plated parts.

For more data circle 18 on Reader Service Card

★ ★ ★

Heat-Fusible Plastisol

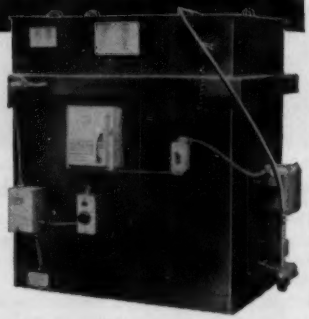
Manufacturer: G. S. Plastics Co., 15585 Brookpark Rd., Cleveland, Ohio.

Material: XL-12 Heat Fusible Plastisol, a bake-on coating.

Properties: Good resistance to cuts, abrasion, wear; resists most plating solutions, short-cycle vapor degreasing, heat; produces tough, flexible, glossy surface; coating is hard and dense;

Aircon

VAPOR DEGREASERS



MODEL "75"

ANY SIZE... Standard or Custom

Aircon Vapor Degreasing Systems are available in a complete line, ranging in size, from the smaller bench and barrel-type units to the larger, permanent, high capacity degreasers.

Aircon Degreasers are:

Gas, Electric or Steam Heated • Complete Units with all safety equipment

NO EXTRAS TO BUY

Write today for full information

WE ARE DESIGNERS AND ENGINEERS OF SPECIAL DEGREASING EQUIPMENT. CONSULT US ON YOUR DEGREASING PROBLEMS.

Armstrong & White

CHESWICK, PENNSYLVANIA

For more data circle 360 on Postpaid Card

EVERY ONE A WINNER!

BUCKINGHAM POLISHING and BUFFING COMPOSITIONS

Representation in Major Cities

•

Write Dep't. C for Samples

The BUCKINGHAM PRODUCTS Co.

14100 FULLERTON AVE. • DETROIT 27, MICH.

For more data circle 361 on Postpaid Card

low viscosity, high fluidity; good adhesion to metal being coated; resists air entrapment and bubbles; good heat stability: will not discolor even under prolonged baking; standard color: orange; can be supplied in other colors; compatible with most other plastisol coatings.

Typical Applications: Plating and processing equipment; materials-handling equipment; plating and anodizing racks; tanks, baskets, other equipment that is exposed to corrosives.

For more data circle **19** on Reader Service Card

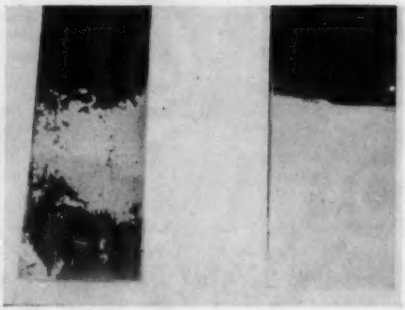
★ ★ ★

Stripper Additive

Manufacturer: Magnus Chemical Company, Inc., 208 South Ave., Garwood, New Jersey.

Material: Activall, an additive for immersion-type caustic strippers used to remove various organic finishes.

Properties: Increases effectiveness of stripping solutions. Decreases stripping time. Aids in rust removal and in stripping finishes that cannot be removed easily. Increases normal life of solution.



Magnus Activall aids in stripping tough finishes. Panel on left was immersed in stripper without the additive; panel on right was stripped clean using stripper with additive.

Bond® TACK CLOTH for a SPECK-FREE FINISH EVERY TIME!

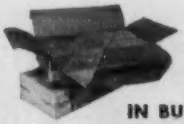
SAVE TIME AND WORK WITH BOND TACK CLOTHS — NOW AVAILABLE IN HANDY ROLLS OR CUT BULK—WHITE OR GOLD —IN FOUR DIFFERENT TYPES OF CLOTH

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up! The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" or 9" x 18" for ease of handling. ALL BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free, and Wax-Free. Gives a sparkling speck-free Finish every time. Clean and Sanitary. No waste. Choice of Standard, Extra Tacky or Less Tacky.

IN ROLLS

Cut off any size piece to use as needed



IN BULK

Cut and folded. Ready to use.

TRY THEM AND COMPARE RESULTS.

Samples Gladly Sent Upon Request.

Bond® CHEMICAL PRODUCTS CO. 2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

"The Tacky Wiper Specialist"

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES—144 TO THE CARTON. A WARRANTY OF SATISFACTION IN EVERY CARTON.

For more data circle 362 on Postpaid Card

SWEETEST RUNNING LATHE WE EVER USED

Users all agree . . . Hammond Variable Speed Polishing and Buffing Lathes set the standard for smooth, dependable, versatile and continuous production. You simply turn the handy dial control to any point between 1500 and 3000 RPM . . . instantly the Lathe adjusts to conform to your spindle speed selection. You move from one speed to another without breaking stride. Polishing and "cut down" — buffing — satin finishing. Advantages are endless. Available with one or two independent spindles.

America's most complete line of Polishing and Buffing Lathes—up to 50 HP. Write for catalog today.

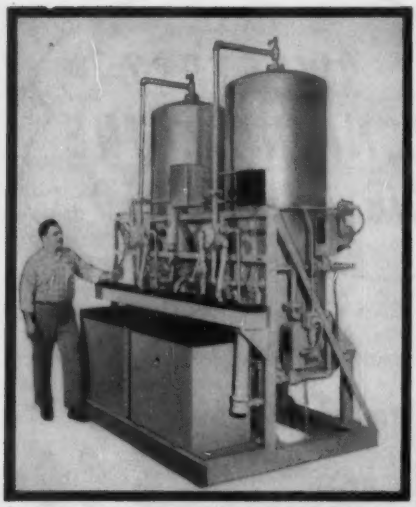
HAMMOND MODEL VRO
VARIABLE SPEED POLISHING
AND BUFFING LATHE

Hammond Machinery Builders INC

1622 DOUGLAS AVENUE • KALAMAZOO, MICHIGAN

See Us At The Plant Maintenance Show — Chicago Amphitheatre, Booth 1171, January 27 - 30.

For more data circle 363 on Postpaid Card



BARNSTEAD DEMINERALIZERS FOR METAL FINISHING IN CAPACITIES OF FROM 30 to 2500 G.P.H.

In rinsing or plating . . . in anodizing or make-up . . . in fact, wherever pure, mineral-free water is a necessity . . . Barnstead Demineralizers can save you money. First, because they are versatile: they come in all sizes from 30 to 2500 gallons per hour and in mixed-bed, two-bed, and four-bed models. Second, because they are low-cost in operation, producing pure water for as little as 5c per thousand gallons. Third, you get authoritative answers from Barnstead — with over 75 years' experience in ALL phases of producing pure water for all industrial applications.

NEW LITERATURE:

Catalog 127-A illustrates Barnstead's complete line of water demineralizers, and presents factual information which can help you reduce waste and save money.

Barnstead
STILL & DEMINERALIZER CO.
12 Lanesville Terrace, Boston 31, Mass.
For more data circle 364 on Postpaid Card

Typical Applications: Stripping hooks, rejects, metal parts prior to reconditioning, removing light rust deposits. Stripping any painted iron or steel part.

For more data circle **20** on Reader Service Card

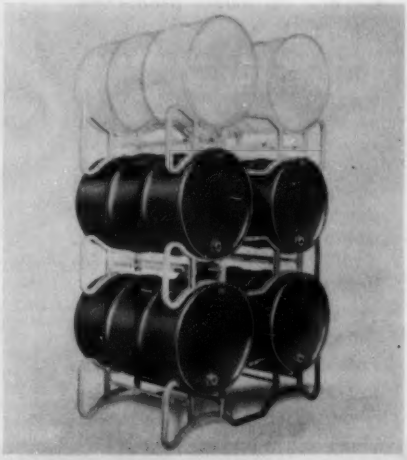
★ ★ ★

Barrel Rack

Development of a steel rack designed to permit the handling and stacking of loaded or empty barrels and drums with standard fork lift trucks has been announced by the Pressed Steel Division of Republic Steel.

The drum rack supports two loaded barrels and facilitates the stacking of pairs of containers. Flexibility of handling and storage is provided, because individual drums or pairs of drums can be removed without excessive handling of the other drums in the stack.

The units are made so that a two-

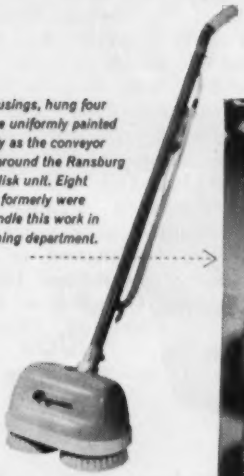


Steel rack developed by the Pressed Steel Division of Republic Steel permits the stacking of loaded barrels and drums without the need for special handling equipment. Ordinary fork lift trucks can be used to handle and stack drums, loaded or unloaded.

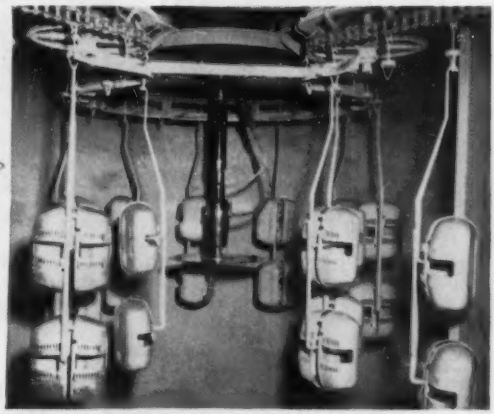
Regina Reports 50% Paint Saving with RANSBURG NO. 2 PROCESS

Electrostatic Spray Painting

That's because Ransburg No. 2 Process puts the paint on the product instead of up the stack



Aluminum housings, hung four to a fixture, are uniformly painted electrostatically as the conveyor makes a loop around the Ransburg reciprocating disk unit. Eight hand sprayers formerly were required to handle this work in Regina's finishing department.



The Regina Corporation, Rahway, N. J., replaced hand spray with Ransburg No. 2 Process to paint their twin-brush Floor Polisher and Scrubber, and their Electrikbroom.

Now, a single reciprocating disk unit automatically handles the work which formerly required eight hand sprayers. Even with increased production, Regina is using 50% less paint. Quality of the work is improved with maximum uniformity on all parts.

NO REASON WHY YOU CAN'T DO IT, TOO! Want to know what Ransburg No. 2 Process will do for you in your finishing department? If your present production justifies conveyorized painting, let us prove the many cost-saving benefits which can be yours. Write for our No. 2 Process brochure which pictures many on-the-line examples of electro-coating on a wide variety of products, and describes our free survey service.

Ransburg ELECTRO-COATING CORP.

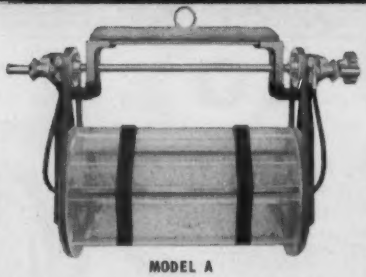
RANSBURG

Indianapolis 7, Indiana

For more data circle 365 on Postpaid Card

STUTZ Complete Cycle

BELT DRIVEN PLATING CYLINDER



MODEL A

- **NO CYLINDER GEARS**
- **NO CYLINDER BEARINGS**
- **LOWEST POSSIBLE MAINTENANCE**
- **HIGHEST POSSIBLE CURRENT**

These units are the result of our experience with industry and service plating. The belt design has now proven superior to gear driven types, and with outboard mounted driving pulleys, belts can be changed if necessary, in seconds without tools. In addition to our own equipment these units made to fit all makes of plating tanks and furnished also with motor drives mounted directly on cylinder superstructure. Cylinder current horns are heavy copper alloy and are sized for either four or three horn saddle contact. Cathode contactors are dangler type, others available. Standard sizes 14″x30″ and 14″x36″ (I.D.) 12 additional sizes from 12″x24″ to 18″x42″ (I.D.) Standard perforations 3/32″ round on 3/16″ centers. Special dual openings for processing of extremely small parts available.

Write for Catalog and Prices

Pat. Pend.

the **STUTZ** Company

4410 Carroll Avenue

Chicago 24, Ill.

For more data circle 366 on Postpaid Card

drum lift can be made from either front, back or either side. The same accessibility applies to a single top drum, for it can be removed from the supporting rack from any side with the tines of the fork lift truck.

The units also make it easy to get at bunged drums for draw-off.

Any standard fork lift truck can pick up, move and stack as many tiers of loaded drums at one time as its lifting capacity permits. And handling of loaded containers with the barrel rack is safer because there is little chance of container contact.

The barrel racks are made of heavy-gauge channel steel, strongly braced and welded. One unit will support 7,500 pounds, in 18-gauge drums and 14,000 pounds in 16-gauge drums.

Further information is available from the Pressed Steel Division, Republic Steel Corporation, 6100 Truscon Ave., Cleveland, Ohio. Ask for Bulletin 961.

For more data circle **21** on Reader Service Card

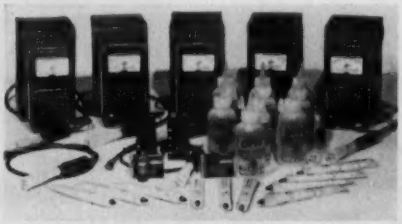
★ ★ ★

pH Package

Manufacturer: Analytical Measurements, Inc., Chatham, N. J.

Description: A kit that contains five portable pH meters with carrying cases and buffer solutions, 2 buffer kits, 2 extra probes, and 2 sets of batteries.

Applications: Where multi-station



Packaged pH: for checking many stations

CLEANING

FROM
PRECISION
BEARINGS

TO
ROUGH
CASTINGS

YOU'LL FIND
YOUR ANSWER IN THE COMPLETE MAGNUS LINE of
materials, machines and methods all designed specifically for you by Magnus' core of experienced cleaning engineers and backed by Magnus' money-back guarantee of satisfaction.

Write today for your free copy of new complete, yet compact file folder guide to Industrial Cleaning. Write to Magnus, 208 South Avenue, Garwood, New Jersey.

FREE

INDUSTRIAL CLEANING DIVISION

magnus
CHEMICAL COMPANY INC.

magnus

a world-wide organization specializing in cleaning and protection of all surfaces.

For more data circle 367 on Postpaid Card

pH control is necessary, to eliminate inter-department trips in checking pH.
For more data circle **22** on Reader Service Card

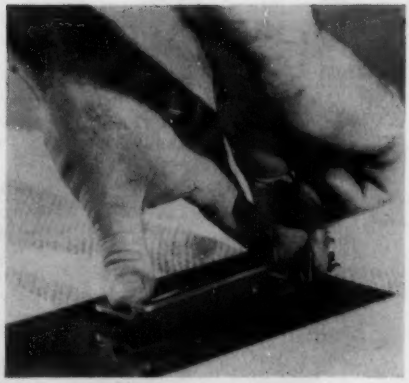
★ ★ ★

Hardness-Adhesion Tester

Manufacturer: Gardner Laboratory, Inc., 5521 Landy Lane, Bethesda 14, Maryland.

Description: An instrument that provides a means of accurately studying the scratch hardness and adhesion characteristics of organic coatings.

Operation: A scratcher tip mounted so that a cantilever spring provides steadily increasing force as the tip is drawn over the test surface cuts deeper and deeper into the film, finally breaking through to the substrate. The total travel range of the tip is 100 mm. The distance that it travels before cutting through is a measure of the scratch hardness of the film being tested.



Gardner Lab's Hardness-Adhesion Tester

Adhesion of the film is measured by setting up the instrument in a little different manner, so that the tip is exerting full force to begin with and

NO HEAT! Not disc—not orbital a completely NEW sanding action!

• CUTS 5 TIMES FASTER • NO TRACKS
• NO DUST • NO LOADING • SAVES 75% ON ABRASIVES

Easy DUAL-ACTION SANDER DOES ALL THE JOB

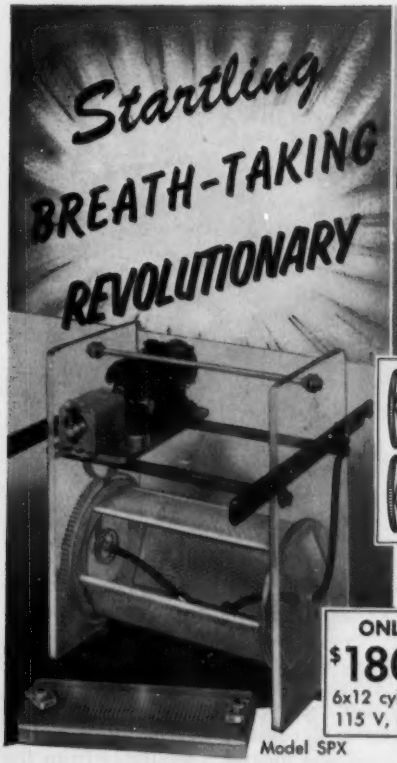
Can't be beat for hundreds of metal jobs. From welds and white metal slick-up to mirror finishes.

DSM DETROIT SURFACING MACHINE CO.

Make us prove it—ask f literature or a trial!

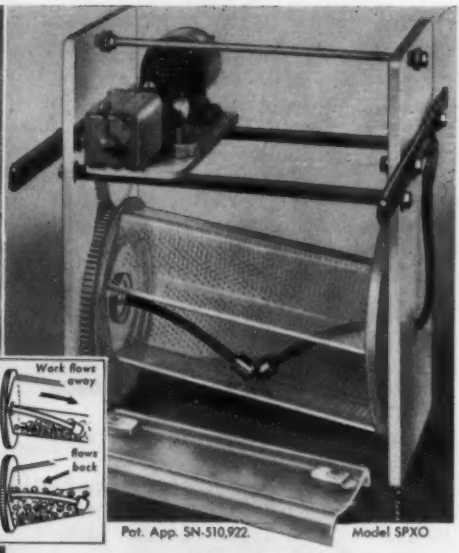
1266 East Eight Mile Road, Detroit 20, Michigan
For more data circle 368 on Postpaid Card

Startling BREATH-TAKING REVOLUTIONARY



ONLY $180.00
6x12 cylinder
115 V, 60 C

Model SPX



Pat. App. SN-510,922. Model SPXO

BELKE Double Oscillating Cylinder

Affords uniformity of deposit never before obtainable in barrel plating.

Eccentrically mounted cylinder oscillates as it rotates. Moves the work back and forth *across* the cylinder. No parts remain shielded by cylinder ends. All parts exposed for plating so uniform you can deposit specified thickness in a fraction of the time formerly required.

An absolute must for washers and flat pieces that tend to stick together.

All sizes from 14 x 30 regulars to 6 x 12 portables.

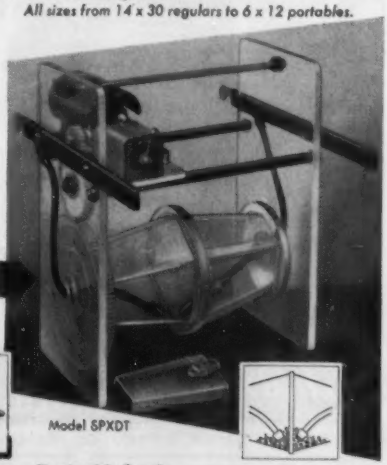
Conventional Non-oscillating Cylinder

Features of all three Porto-Platers shown

- "V" notch contact; fits any place on cathode rod.
- Self-contained motor drive with reversing switch.
- Obstruction free cylinder.
- Attached Plexiglas cover locks—never misplaced.
- One-piece dangler cable with ball contact.
- High temperature Plexiglas cylinder, cover, hangers, gears and bushings.
- Geared head motor, 1/50 HP. 115 V. 60 C, 1 Ph.

BELKE Double Tapered Odd-Lot Plater

Two *tapered* compartments. The taper piles the work around the ball contact in each compartment. Assures uniform plating in each compartment of any quantity from a few pieces to a full load. Avoids costly hand wiring otherwise necessary in plating small quantities.



Model SPXDT

BELKE MANUFACTURING COMPANY
947 Cicero Ave., Chicago 51, Ill.
EVERYTHING FOR PLATING PLANTS

For more data circle 369 on Postpaid Card

progressively less force through the stroke. The point at which the tip leaves the substrate and begins to "ride up" onto the film provides an indication of the film's adhesion.

Applications: Testing hardness and adhesion of paint, lacquer, other organic coatings.

For more data circle **23** on Reader Service Card

★ ★ ★

Exhaust Fan

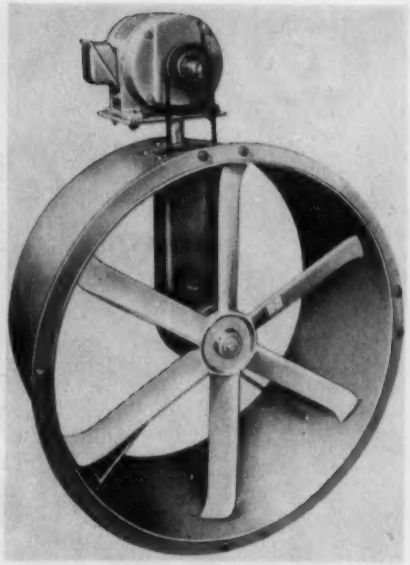
Manufacturer: Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

Equipment: A belt-driven exhaust fan.

Features: Designed to provide maximum exhaust per horsepower used. Several models available, with static pressures of ¼ to 1¼ inches, and ability to move up to 28,375 c.f.m., based on a motor speed of 1,725 r.p.m.

Construction: Aluminum fan blades, V-belt drive, dust-tight housing. Meets fire underwriters specifications. Detailed specifications available from the manufacturer.

For more data circle **24** on Reader Service Card



Binks Belt-Driven Exhaust Fan: designed to exhaust more c.f.m. per horsepower

★ ★ ★

Buffs

Manufacturer: American Buff Co., 2414 S. LaSalle St., Chicago 16, Ill.

Material: Buffs with clinch rings that have better gripping power.

Description: Projection welding procedure developed by the company is said to produce a weld with greater strength and improved uniformity; a method of die forming the clinch-ring teeth is used to produce teeth larger than the company could make formerly. The two improvements allow use of heavier fabrics, and production of buffs that give greater mileage with-

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FOR PLATING AND PICKLING

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1571 Harrison Street, Kalamazoo, Michigan

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but METAL FINISHING IS!

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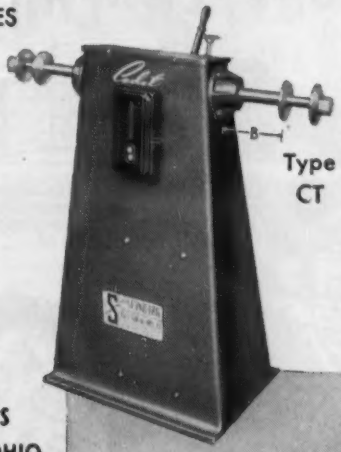

Type CT

Write for NEW Bulletin C-10

STANDARD electrical tool co.

BUFFERS - POLISHERS and MACHINE TOOLS

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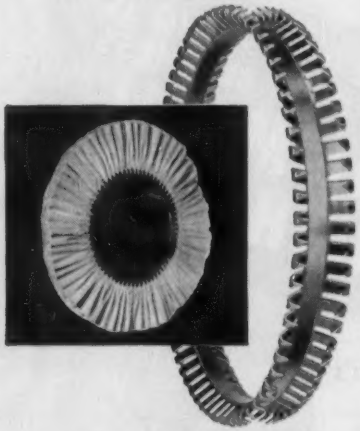
For more data circle 371 on Postpaid Card



American Buff's Improved Clinch Ring

out risk of pullout or broken teeth, the company states. These clinch rings are now standard on all American Air-Cooled Buff types. Catalog sheets available from the manufacturer.

For more data circle **25** on Reader Service Card

★ ★ ★

Dust Collecting Bags

Manufacturer: Modern Dust Bag Co., Inc., 132 E. Railroad Ave., West Haverstraw, N. Y.

Equipment: Filter Power Dust Bags, for use on dust collectors.

Description: Dust bags constructed to make replacement and servicing easier. Telescoping design increases capacity without need for more space. Available in cotton sateen, cotton, cotton flannel, and Dynel. Flame-proofed and acid-resistant bags are also available.

For more data circle **26** on Reader Service Card

★ ★ ★

Copper Plating Process

Details on a recently developed acid copper plating process have been dis-

COPPERHEAD!
See these Copperheads, Har
We're still not getting anywhere w
our cleaning problem. I think I'll
Dick Relick at Pennsalt . . . he help
us straighten out our phosph
coating trouble last month, and
ought to have an answer
for this.
Yes, in fact we've batted this
all around our department. It's
possible you're using too strong
a cleaner for this job.
Too strong? Now
there's a switch!
Cleaning before porcel
enameling isn't a cut-and-dr
proposition. We think you n
a mild, wetting-type clea
built to penetrate this comp
soil. We suggest you try a dr
of Pennsalt 85.

TABLE I

	Range	*Optimum*
*Copper Sulfate	30-35 oz./gal.	33 oz./gal.
**Sulfuric Acid	8-12 oz./gal.	10 oz./gal.
Temperature	Room temperature to 115 deg. F.	100 deg. F.
Current Density	5 a.s.f. to 150 a.s.f.	50 a.s.f.
Agitation	Rocker arm or air agitation	

*Use Technical Grade Copper Sulfate Crystals

**Use Technical Grade 66°Be Sulfuric Acid

tributed by Sel-Rex Corporation, Nutley 10, N. J.

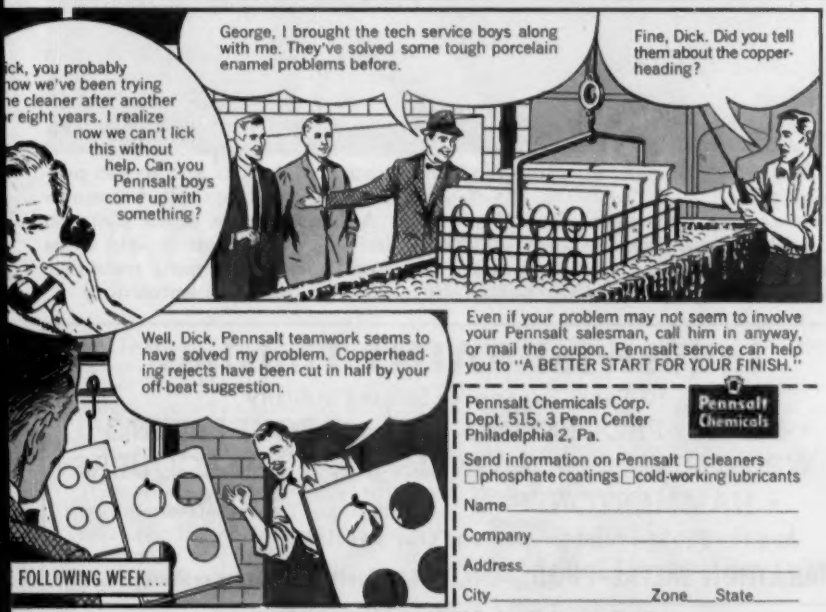
Bath Preparation and Operation: Two addition agents, identified as No. 1 and No. 2, are added directly to new or existing copper sulfate or copper fluoborate baths. The two additives should not be mixed prior to being added to the bath. Agent No. 1 is added only when the bath is prepared. Agent No. 2 is replenished as needed.

Recommended make up of the copper sulfate bath is as shown in Table I.

Recommended make-up of the fluoborate bath is as shown in Table II.

A 2 to 1 copper anode to cathode ratio is recommended for either sulfate or fluoroborate copper baths.

Operating Characteristics of the Bath: Good throwing power and evenly distributed deposits, even in blind recesses and holes; resists uneven


ick, you probably
now we've been trying
he cleaner after another
r eight years. I realize
now we can't lick
this without
help. Can you
Pennsalt boys
come up with
something?
George, I brought the tech service boys along with me. They've solved some tough porcelain enamel problems before.
Fine, Dick. Did you tell them about the copper-heading?
Well, Dick, Pennsalt teamwork seems to have solved my problem. Copperheading rejects have been cut in half by your off-beat suggestion.
FOLLOWING WEEK...

Even if your problem may not seem to involve your Pennsalt salesman, call him in anyway, or mail the coupon. Pennsalt service can help you to "A BETTER START FOR YOUR FINISH."

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Dept. 515, 3 Penn Center
Philadelphia 2, Pa.

Pennsalt Chemicals

Send information on Pennsalt ☐ cleaners ☐ phosphate coatings ☐ cold-working lubricants

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Company_____

Address_____

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TABLE II

Copper Fluoborate —as metal	8 oz./gal.
Copper Fluoborate Salts—pH between .5-1.5	30 oz./gal.
Temperature	80 to 120 deg. F.
Current Density	75 to 125 a.s.f.
Agitation	Rocker arm or air agitation

build-ups and "trees"; can be used in a wide range of current densities: 5 to 150 a.s.f.; fast rate of deposition; will not affect laminate boards used in printed circuit manufacture.

Outstanding Deposit Property: Good ductility—can be buffed as easily as gold, it is stated.

For more data circle **27** on Reader Service Card

★ ★ ★

Ultrasonic Cleaning Machine

Manufacturer: Hermes Sonic, 13-19 University Pl., New York 3, N. Y.

Equipment: A one-gallon ultrasonic cleaning unit.

Construction: Unit has generator with built-in timer, tuning knob and visual control; output is 50 watts average, with a peak of 200 watts;

Hermes Sonic Portable Ultrasonic Cleaner

stainless steel tank with three transducers.

Applications: For cleaning hard-to-clean parts and intricate assemblies; for use in degreasing, decontamination, removal of excess flux, mixing and emulsifying.

For more data circle **28** on Reader Service Card

★ ★ ★

Bus Bar

Developer: Reynolds Metals Co., Louisville, Ky.

Material: Silver plated aluminum bus bar.

Characteristics: Connections can be made by relatively simple soldering and brazing techniques. No special preparation of contact surfaces is necessary when making bolted connections. Adhesion of the silver plate on aluminum is good. Plate is said to be free from pores; have good resistance to abrasion, and good formability.

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Shoot your chrome questions at Diamond

Let DIAMOND's technical specialists zero in on your chrome-plating problems. These specialists are ready and able to handle your questions—quickly and completely. Their service is free.

In making chromic acid, DIAMOND controls quality from start to finish. DIAMOND experience begins with importing the chrome ore and making the soda ash. It includes *every step* through production and delivery, right up to standing by your side, if you wish, to help you get top-quality plating results consistently, economically.

DIAMOND facilities—two chromic acid plants and nine warehouses and sales offices across the country—assure you uninterrupted supply. DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals

For more data circle 374 on Postpaid Card

Typical Applications: Bus systems, switchgear, power transformers, panel boards, other electrical devices.
For more data circle 29 on Reader Service Card

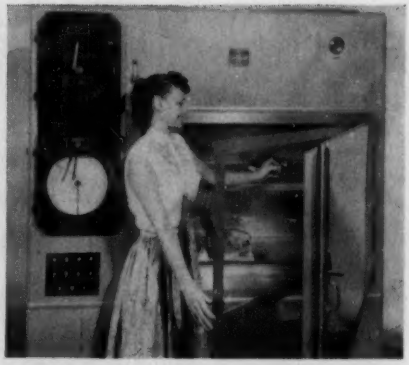
★ ★ ★

Climate-Maker

Manufacturer: American Instrument Co., Inc., Silver Spring, Maryland.

Description: An instrument that will duplicate almost any weather condition, from a hurricane to the arid climate of the desert.

Construction: Has well-insulated stainless steel test chamber with capacity of 9.6 cubic feet. Control system records time, temperature and humidity. Controls are accurate within plus or minus one per cent relative humidity and plus or minus one deg. F.



Climate-Lab: duplicates weather conditions

Operation: The Climate-Lab conditions the air before it enters the test chamber. Will recreate any climatic condition up to 99 per cent relative humidity and up to 160 deg. F.

Typical Applications: Testing food

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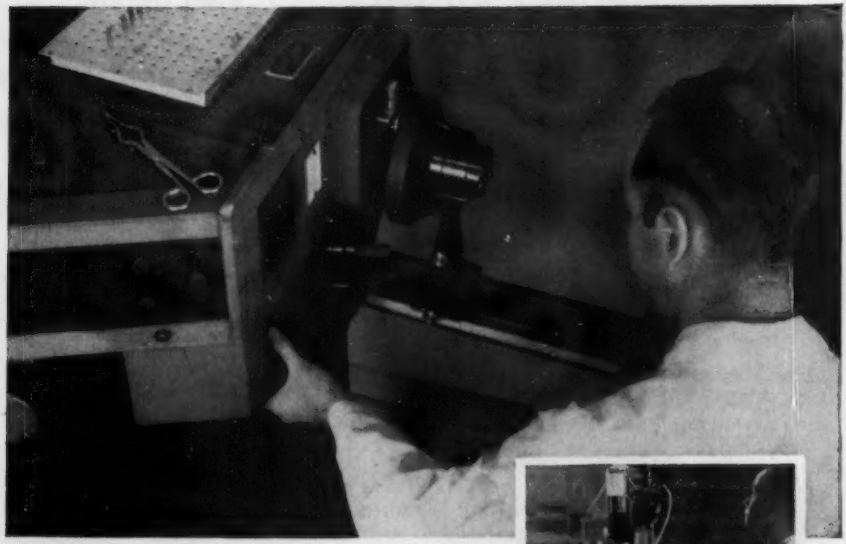

"Al, you must be crazy . . ."

"A few years ago we decided to make our Quality Control Lab as good as could be found anywhere. We staffed it with first rate people and bought the latest in equipment including the finest Spectrographic Instrument available. At this point, our accountant — you know the type — a nice enough guy, but never happy unless he's shaking his head and wiggling his fingers at you . . . said to me, 'Al, you must be crazy, putting all this money into Quality Control.'

"Well, it took a lot of doing — and plenty of dollars, but it was worth it. We've grown steadily and it sure is a nice feeling to know that many of our regular customers include the finest platers in the country.

President

Illustrated are several views of our all new Wet and Spectrographic Laboratories, including some of the finest quality control equipment available.

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Sethco Mfg. Co. 2292 BABYLON TURNPIKE, MERRICK, L. I., NEW YORK

For more data circle 378 on Postpaid Card

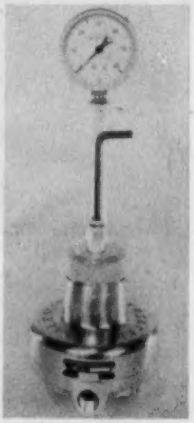
containers, electronic, aeronautical and automotive equipment. Testing performance of finishes under all types of weather.

For more data circle **30** on Reader Service Card

★ ★ ★

Pressure Regulator

Manufacturer: Alemite-Versatal Div., Stewart-Warner Corp., Dept. AF-107, 1850 Diversey Parkway, Chicago 14, Ill.



Alemite Pressure Regulator

Equipment: A sensitive pressure regulator for paint circulating systems.

Operation: Holds outlet pressure constant, regardless of pressure in the main line. Unaffected by solvents and abrasive fluids. Cleaned by back flushing.

Construction: Removable wrench-type adjusting key permits permanent setting. Has 60-pound pressure gage, regulated so that maximum outlet pressure of 50 p.s.i. can be obtained. No restricting passages, little possibility of clogging.

Applications: For paint circulating systems where control of paint pressures between pump outlet and spray gun must be precise and constant. Can be used in other low-pressure applications, such as drawing fluid for punch presses. Will handle any material with near-normal pH.

For more data circle **31** on Reader Service Card

★ ★ ★

Addition Agent

Manufacturer: MacDermid, Inc., Waterbury 20, Conn.

REPORT NO. 1 / ON LOWERING TODAY'S COST OF PRODUCTION

Enough DIVOBOND to phosphatize 1,000 sq. ft. of work

low cost, scale-free phosphatizing

One-half pound of Divobond in solution covers 1,000 sq. ft. of work with a dense, tight, uniform iron phosphate coating. Using less compound to initiate a better finish automatically lowers production costs.

Another cost-cutting Divobond feature is its remarkable scale prevention action. Even in hard water areas, plants report a year or more of continuous operation without a sign of scale. Build-up is eliminated and nozzles are free to spray on even, uniform coatings, thus eliminating appreciable maintenance costs. This scale prevention also lowers heating costs by keeping coils free of insulating blankets of scale.

Divobond is easy to control. Its non-critical pH permits operation through a wide range. A simple titration shows solution concentration.

Divobond may be used in two and three stage washers with mild steel equipment. Reduced capital equipment requirements and economical surface preparation possible with Divobond suggests consideration in your plant.

Ask your D-Man for a plant survey to determine Divobond's advantages in your operations. Or, for Divobond literature, write to *Metal Industries Department, The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.*

PLANTS IN CHICAGO, NEWARK, AND SOUTH GATE, CALIF. WAREHOUSES IN PRINCIPAL CITIES.

DIVERSEY DIVOBOND

For more data circle 379 on Postpaid Card

Material: A liquid addition agent called Aluminum Bright Dip Corrective Solution, for nitric-phosphoric acid bright dip baths.

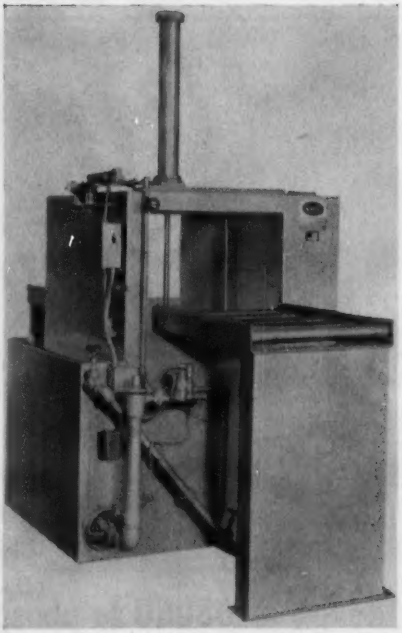
Properties: This additive restores the luster-producing properties of bright dip baths; prolongs the useful life of the bath; and helps to counteract accumulations of certain organic compounds, such as buffing compounds; also counteracts some inorganics. Complete data given in Technical Data Sheet No. 21B-2, available from the manufacturer.

For more data circle **32** on Reader Service Card

★ ★ ★

Washer for Heat-Treat Lines

A washer designed to be used for removing oil and dirt from work before and after heat treating or for general cleaning operations has been announced by Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill. The unit may be used either in an integrated continuous line or as an individual unit.



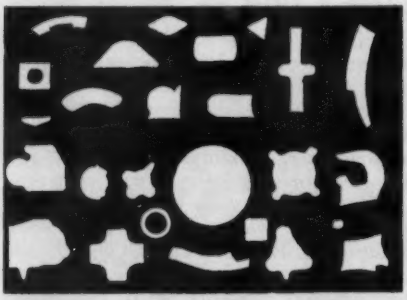
Eclipse "Clean-Line" Washing Machine: for heat-treat lines and other parts-cleaning.

The "Clean-Line" washer uses hot caustic or detergent in a 300-gallon tank. Jet-type air agitation is provided. A timer which can be set to suit the needs of a particular operation controls the cycle.

An Eclipse gas-fired immersion burner firing into a 5-inch tube heats the solution. Temperature is controlled by an immersion thermostat.

Two basic models available: one is loaded at the front, unloaded at the rear; the other is loaded and unloaded through the same opening.

Roller loading and unloading plat-



Pre-Cut Masks Speed Finishing

Brady Pre-Cut Masks are self-sticking — go on fast and accurately. Protect from finishing to inspection. Hundreds of shapes and sizes in stock, for paint spraying, baking, tumbling, etc. Specials made to order. Fast delivery. Distributors in 150 cities.

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746 W. Glendale Ave., Milwaukee 9, Wis.

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VARIABLE SPEED MODEL

BENCH MODEL
VARIABLE SPEED

Bench-Type Single Speed

No. 5—Single Speed

No. 5A—Single Speed

No. 6—Single Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive—*while running.*

Work can be watched — samples removed for inspection — *while running.*

Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

No. 5—Variable Speed

No. 5A—Variable Speed

No. 6—Variable Speed

If You're a Tumbler, Send for This NEW CATALOG

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

134 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

For more data circle 381 on Postpaid Card

forms make the transfer of work on and off the work rack easier for the operator. The work rack itself is pneumatically operated to lower the work into the solution tank. Normal compressed air such as is available in most plants is sufficient to power it.
For more data circle **33** on Reader Service Card

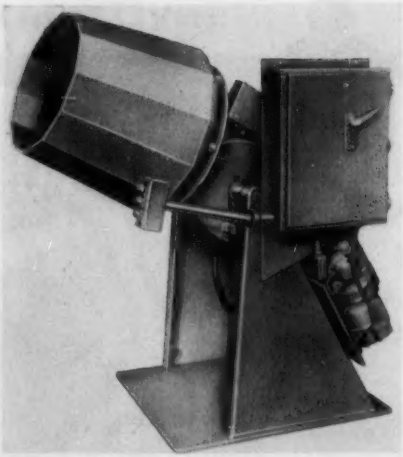
★ ★ ★

Barrel Finishing Machine

Manufacturer: The Baird Machine Company, Stratford, Conn.

Equipment: The Poliaction Barrel Finishing Machine.

Description: Pedestal has been redesigned. Two types of tilting mechanisms available: electric and manual-hydraulic. Also two types of drive: variable-speed motor and vari-sheave drive. Made in two sizes, No. 1 for barrels 13 to 22 inches, and No. 2 for barrels 22 to 36 inches. Can be equipped with barrels in a full range of sizes and types. Literature giving complete details available from the manufacturer.
For more data circle **34** on Reader Service Card



Baird Poliaction Barrel Finishing Machine

★ ★ ★

Salt Spray Chamber

A newly designed salt spray fog test cabinet has been announced by Development Engineering Co., 9 Cross St., Norwalk, Conn.

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.
Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.
Write (Dep't. P) on your letterhead for catalog and price list

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PAINT MIXER
MIRACLE PAINT REJUVENATOR

All paint restored to original consistency without opening the can.
2 minutes per gallon.
MIXERS AVAILABLE
¼ PT. to 55 GALS.
MIRACLE PAINT REJUVENATOR COMPANY
127 E. 9th St., St. Paul 1, Minn.
5 GAL. MODEL

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For Many Uses

NICKEL ACETATE

Uses: Hydrogenation Catalyst Dye fixative on colored anodized aluminum

High Purity

Crystals (Granulated Sugar Size)

Packaged in 100 lb. Fiberpak Drum with Polyethylene Liner

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Use: Electroplating

High Purity

Light, Fluffy Powder

Packaged in 50 lb. Multiwall Bag

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Uses: Source of catalytic nickel for hydrogenation of: Vegetable oils, petroleum products, organic chemicals

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Fine Powder

Packaged in 55 gallon drum —125 lbs. net

NICKEL CATALYSTS

A complete line for Hydrogenation, Methanation, Gas Reforming, Desulfurization, Reduction and many other reactions

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Use: Electroplating, Source of Catalytic Nickel

High Purity

Crystalline

Packaged in 100 lb. Creped Kraft Bag with Polyethylene Liner

NICKEL FLUOBORATE

Use: Nickel plating

High Purity

Green liquid

Packaged in Returnable Drums —150 lbs. net, non-returnable steel pails with Polyethylene Film Liner—55 lbs. net

NICKEL FORMATE—
High Grade Uniform Product

Uses: Source of catalytic nickel for hydrogenation of oils, fats, fatty acids, and organic compounds. Used in some plating solutions

Green Crystal

Packaged in Burlap bag with Polyethylene Liner—100 lbs. net

READILY AVAILABLE HIGH QUALITY

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NICKEL NITRATE
(Purified or Regular)

Uses: Source of Catalytic Nickel; Nickel plating solutions

Crystal

Purified packaged in 44 gallon Fiberpak Drum or Polyethylene lined barrel—400 lbs. net

Regular packaged in 44 gallon Fiberpak Drum—400 lbs. net; or 55 gallon drums —500 lbs. net

NICKEL OXIDE
(Black, Green)

Uses: Ferrite cores (Green), Ground coat frits, glass batch and ceramic glaze colorant, ceramic colors

Black—fine, dense black powder; Green—air floated powder

Black packaged in drums—350, 100, 25 lbs. net

Green packaged in drums—250, 100, 25 lbs. net

NICKEL OXIDE, GREY

Uses: Source of nickel for catalyst use

Free-flowing blue-grey powder

Packaged in drums—300, 100, 25 lbs. net

NICKEL SULFATE
SINGLE NICKEL SALTS

Use: Nickel plating; Source of Catalytic Nickel

High Purity

Small Crystals—$NiSO_4.6H_2O$ (Size meets screen specification of thru 4 on 35 mesh.)

Free Flowing—Rapid Solubility

Packaged in new 100 lb. Creped Kraft Bags

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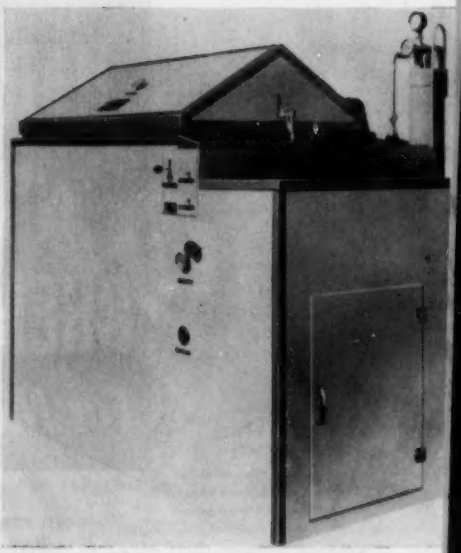
The unit is used to test a large variety of equipment for salt vapor penetration and corrosion resistance.

The chamber has a thermostatically controlled radiant heating "blanket" for temperature control, which ensures control to within ½ deg. F. The heating "blanket" also reduces the warm-up time considerably, the manufacturer states.

This cabinet is available in sizes as small as 2 by 2 by 2 feet with a top-opening cover, and as large as 10 by 10 by 10 feet walk-in rooms.

The test chambers have hydraulic cover lifters, automatic level control of the humidifying tower, and accurate air pressure regulation, all of which are standard equipment. All units come with adjustable monel pneumatic spray nozzles and a separate salt water reservoir.



Salt Spray Chamber: radiant heating blanket

Optional equipment includes pass-throughs, windows, pH meters, and electrical and hydraulic connections.

For more data circle **35** on Reader Service Card

★ ★ ★

Zinc Brightener

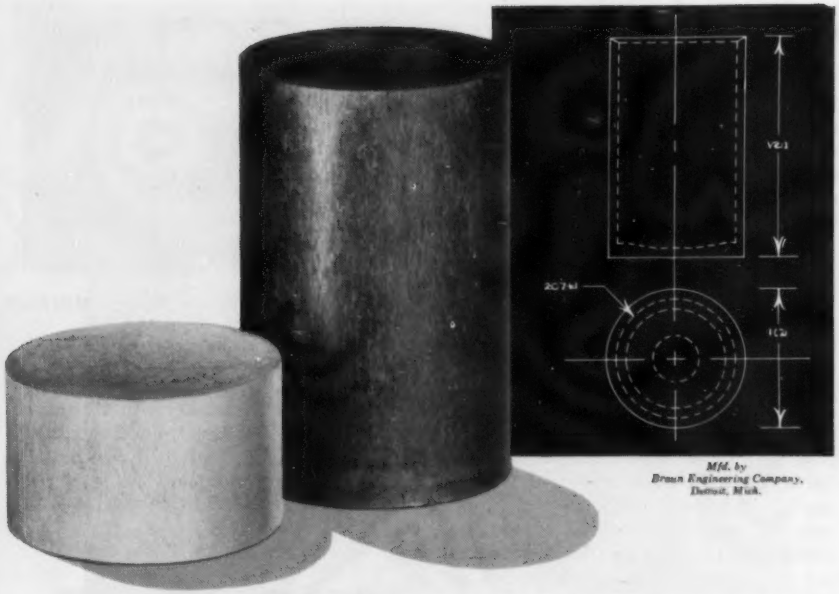
Manufacturer: Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Maryland.

Material: ARP Maintenance Concentrate No. 73, a lower-cost maintenance additive for Iridite No. 4-73 solutions.

Properties: Manufacturer says that use of this material makes possible constant duplication of lustrous, protective surfaces on zinc at less cost.

Applications: Iridite No. 4-73 is used to produce yellow or clear chemically polished zinc surfaces. It may be used as a final finish, with or without clear lacquer, or it may be used as a pretreatment for electroplating.

Randolph
EXPERIENCE and RESEARCH MEAN
BETTER FINISHES
for your products
LACQUERS • ENAMELS
DOPES • THINNERS
CLEAR METAL FINISHES
COLORED LACQUERS
CLEAR S.G. FOR METAL
TEXTURE ENAMELS
SPECIALIZED PRODUCTION FINISHES
AIRCRAFT FINISHES
Depend on us for Prompt Delivery
RANDOLPH PRODUCTS CO.
CARLSTADT, N. J.
For more data circle 385 on Postpaid Card



Mfd. by
Braun Engineering Company,
Detroit, Mich.

EXTRUDED...*and sold for less than the raw stock used to cost!*

Cold extrusion of steel means big reductions in material, machinery, and time. Frequently, as in the case of the automotive motor mount above, the part is made by cold extrusion for about the cost of the raw metal used in conventional methods.

More and more, manufacturers are turning to cold extrusion as a cost cutting, simplified method of making quality parts. Machining is cut to a bare minimum and scrap virtually disappears. "Impossible" jobs are being mass produced at high rates and a lot of the "impossibles" have become production runs only because of Bonderite and Bonderlube.

These two remarkable aids in cold extrusion make metal flow like magic. More severe deformations are possible. Tool and die life are multiplied. Rejected parts are few and far between. Production speeds are greatly increased. Smooth finishes are easily achieved and maintained.

The Parker cold forming staff can give you expert help in the technique of cold extrusion.

Bonderite, Bonderizing, Bonderized—Reg. U.S. Pat. Off.

PARKER RUST PROOF COMPANY
2172 E. MILWAUKEE, DETROIT 11, MICHIGAN

Since 1914—leader in the field

BONDERITE rosion resistant paint base | **BONDERITE and BONDERLUBE** aids in cold forming of metals | **PARCO COMPOUND** rust resistant | **PARCO LUBRITE** wear resistant for friction surfaces | **TROPICAL** heavy duty maintenance paints since 1883

For more data circle 386 on Postpaid Card

Process can also be used to reclaim zinc die castings after plate has been stripped from rejects. The additive is used to keep solution at top efficiency during use.

For more data circle **36** on Reader Service Card

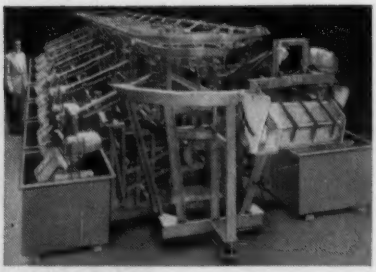
★ ★ ★

Automatic Barrel Plater

Manufacturer: Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Ill.

Equipment: An automatic barrel plating machine.

Construction Features: Horizontal plating cylinders. Hanger-mounted drive. Cylinders are attached by bolting the hanger bridge to the hanger arm of the machine. Standard machine has 18 cylinder stations, including 5 plating tank positions. Eight feet, two inches high at highest point.



Belke Automatic Barrel Plating Machine

Available with double-oscillating or conventional cylinders.

Operating Characteristics: Uniform distribution of deposit, good flexibility. Complete data available on request, from the manufacturer.

For more data circle **37** on Reader Service Card

★ ★ ★

Paint Pump

Manufacturer: Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

Equipment: The "Pogo" Pump, a material - handling pump.

Operation: Pumps paints and other coatings direct from drums to paint stations. Can supply up to four spray guns either directly or through a paint-circulating system. Delivers material at the rate of one gallon per minute. Can be inserted into a standard 2-inch bung or mounted on the rim of any open-head drum.

"Pogo" Pump

Construction: Completely sealed,

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

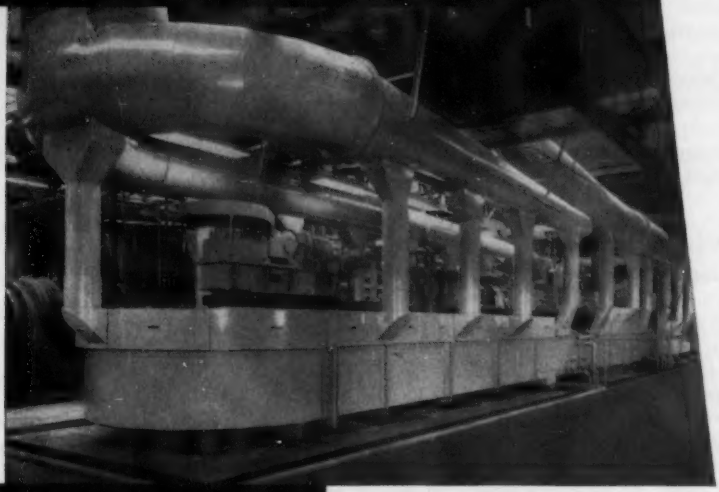
Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle 387 on Postpaid Card

KIRK & BLUM FUME CONTROL SYSTEMS
protect personnel and equipment



Saves 5 Ways...

1. Reduces Air Volume • 2. Lowers Maintenance Costs
3. Cuts Replacement Costs • 4. Improves Working Conditions
5. Eliminates Damage to Equipment

Many manufacturers throughout the nation rely on fume control systems engineered, fabricated and installed by KIRK & BLUM to protect personnel and equipment from damaging fumes.

In this installation the fumes are picked up at the outer periphery of the tank. Therefore, only clean air passes over the centrally located conveyor and plating equipment.

A KIRK & BLUM fume control system will soon prove itself with substantial savings in operating costs, as well as increasing life of vital equipment.

Write for Booklet "F" showing typical installations.

The KIRK & BLUM MFG. CO., 3116 Forrer Street, Cincinnati 9, Ohio

KIRK & BLUM FUME CONTROL SYSTEMS

For more data circle 388 on Postpaid Card

permanently lubricated air motor, separate from the pump, to prevent fluids from harming motor parts. Reciprocating, positive-displacement piston pump, with 2 to 1 ratio. Can be dismantled without special tools. Additional data available from the manufacturer.

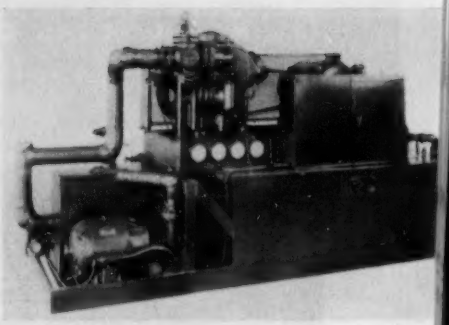
For more data circle **38** on Reader Service Card

★ ★ ★

Cooler for Anodizing Baths

A refrigeration and recirculation unit for cooling anodizing baths has been introduced by Mayer Refrigerating Engineers, Inc.

Mayer "Chil-er" refrigeration and recirculating units eliminate excessive process heat by circulating cold water through lead pipes immersed in the acid bath; or by supplying cold water to special heat exchangers through which the acid is circulated.



Mayer Cooling Unit for Anodizing Baths

"Chil-er" units for plating and anodizing automatically regulate process solutions to within two deg. F. for plating operations such as the Martin "hardcoat" process, where close temperature control must be maintained.

The units are available in 22 models with up to 150-ton capacity.

For further information, write Mayer Refrigerating Engineers, Inc., Lincoln Park 5, New Jersey.

For more data circle **39** on Reader Service Card

★ ★ ★

Acid Gold Plating Process

Manufacturer: Sel-Rex Corporation, Nutley 10, N. J.

Process: An acid-type gold plating process developed specifically for plating printed circuits.

Operating Data: Solution is used at room temperature; easy to prepare, simple to maintain and control. No strike is necessary. Solution affects neither laminate nor adhesive.

Deposit Properties: Good resistance to abrasion; fine-grained deposits, uniform and bright, regardless of deposit thickness; good adherence, providing the copper has been properly cleaned.

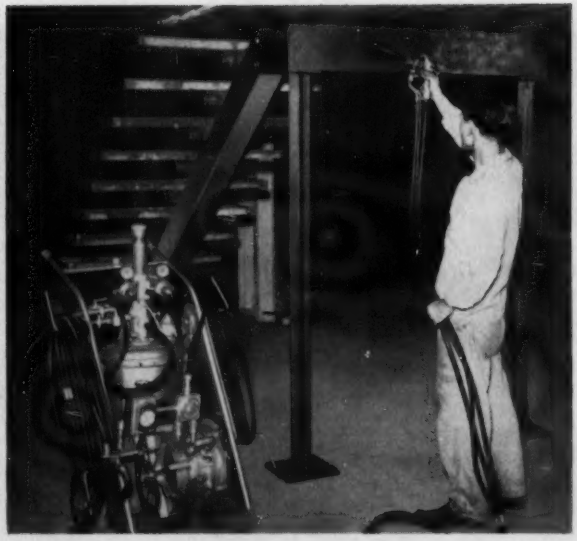
Technical paper available from the manufacturer fully describes bath

Send for this folder on D'OILER DEGREASERS

Contains all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic, Driers, Stills and Specials.
When the job needs a degreaser . . . there's a D'OILER for the job.

mechanical process co., inc.
392 VALLEY ST. • SOUTH ORANGE, N. J.

For more data circle 389 on Postpaid Card



STEEL FABRICATOR INCREASES PRODUCTION WITH SPEE-FLO PACKAGE UNIT

PROBLEM: To finish an additional 15 tons of fabricated steel daily with no increase in facilities or personnel.

SOLUTION: Installation of Spee-Flo "Little Chief" Portable Hot Spray Unit.

The Offenhauser Company, Houston, fully expected to add to its spraying area and paint crew in order to finish ⅓ more products daily. However, with Spee-Flo Portable Paint Heaters, they handled the increased production *without adding to their overhead.* Overspray is greatly reduced, and they enjoy big savings in solvent and coating materials.

The same advantages and benefits result with any type of finish when it is hot sprayed. See what it can do for *you.*

WRITE for free booklet, "Why Hot Spray?"

SPEE-FLO

Dept. PF-35, 720 Polk Ave., Houston, Texas

For more data circle 390 on Postpaid Card 7931

preparation and control, equipment needed, and other topics of interest to printed circuit manufacturers.
For more data circle 40 on Reader Service Card

★ ★ ★

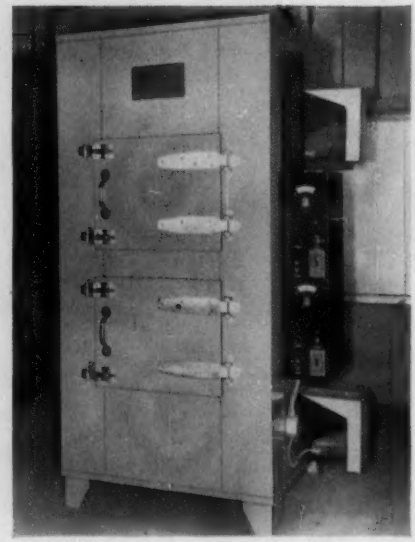
Two-Chamber Oven

Manufacturer: Grieve-Hendry Co., Inc., 1401 W. Carroll Ave., Chicago 7, Ill.

Equipment: A heat-treatment oven with two chambers.

Features: Two chambers of this batch-type oven operate independently. Each has maximum operating temperature. Electric or gas heating. Upper chamber has 15-kw input capacity, with maximum temperature of 1000 deg. F. Interior of this portion contains 720-c.f.m. blower. Lower chamber has 6-kw heat input capacity with maximum operating temperature of 650 deg. F. This chamber has 400-c.f.m. blower. Individual indicating and excess temperature controls. Meets military and aircraft specifications.

Applications: Relieving hydrogen embrittlement on plated parts; stress relieving; and so on.
For more data circle 41 on Reader Service Card



Grieve-Hendry Two-Chamber Oven: two temps

★ ★ ★

Multi-Use Barrel

Manufacturer: Speed-D-Burr Corp., 3613-e San Fernando Rd., Glendale, California.

Equipment: The Multi-Function Fixture Barrel.

Description: A barrel that is designed to be used in any of three ways. It can be used as a single-cavity barrel; by inserting a compartment-type container into the main barrel, six or more compartments are obtained, each of which can hold a different type of part or media; by placing a holding fixture into the main barrel,

WHY
DO YOU ALLOW RAPID WEAR ON YOUR BUFFING FIXTURES

when they can be *FUSECOATED* to last up to a year or more? We specialize in protective coatings for fixtures of all kinds and would like to add your name to our long list of regular customers.

Write
for our general information folder or send sample fixture or drawing of same to be FUSECOATED.

Fusion Metal Coating Co.
25493 West 8 Mile Road
Detroit 19, Mich.

For more data circle 391 on Postpaid Card

Cleaning Specialists*

* [SPE'CIAL·IST—One who devotes himself to some special branch of activity.]

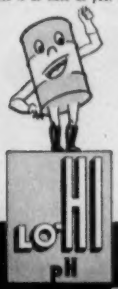
At Northwest our "special branch of activity" is solving your cleaning problems.

Behind your friendly, competent Northwest Sales Engineer stands a reputation for providing industry with low-cost, analytically-correct, job-adjusted chemical cleaners.

From Northwest's years of experience in formulating the RIGHT cleaner for your specific needs have come such developments as the LO-HI pH PROCESS—for cleaning prior to plating, painting, or vitreous enameling; ALKALUME PROCESS—for preparing aluminum and magnesium for finishing and spot welding; INTERLOX PROCESS—for phosphate coating; SPRA-LUBE—to control over-spray of "today's" paints in water wash paint booths; PAINT STRIPPERS—specific to your needs; SUPER-DRAW & FLUID FILM—for drawing metals.

Remember—YOUR COST PER FINISHED ARTICLE IS THE TRUE COST OF YOUR CLEANER.

Northwest's production-tested chemicals and "Right the first time" recommendations will save you money. Northwest Service is as close as your phone.



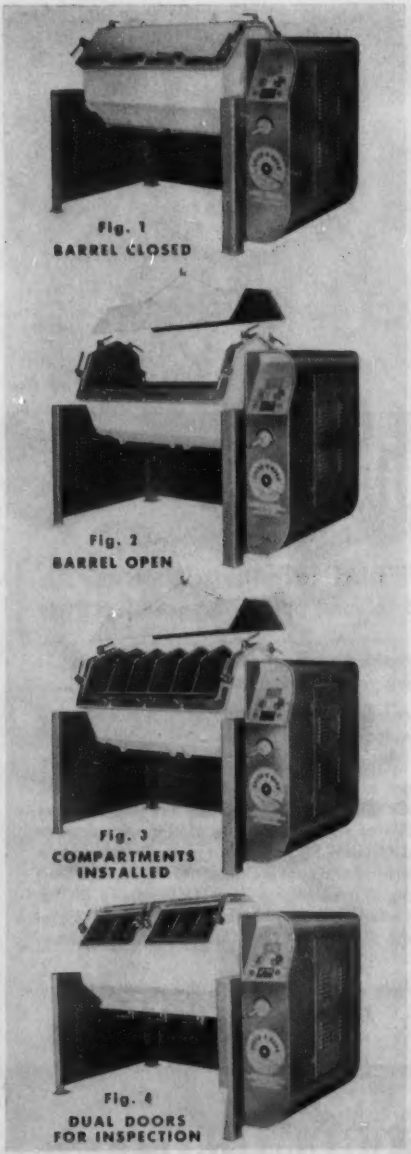
Northwest products are manufactured on the west coast by—
ALERT SUPPLY COMPANY • Los Angeles

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control *serving you since '32*

For more data circle 392 on Postpaid Card



Photos Show Speed-D-Burr Multi-Function Fixture Barrel's Construction Features

it can be used to finish large pieces that must be held in place.

Construction Features: Top section of barrel can be removed to insert the compartment sections or holding fixture. Two inspection doors, hinged to the barrel. Variable-speed motor. Start-and-stop timer. Positive static brakes. Complete details and specifications given in catalog sheets, available from the manufacturer.

Typical Applications: Shops that have many different types of parts and materials to handle intermittently.

For more data circle 42 on Reader Service Card

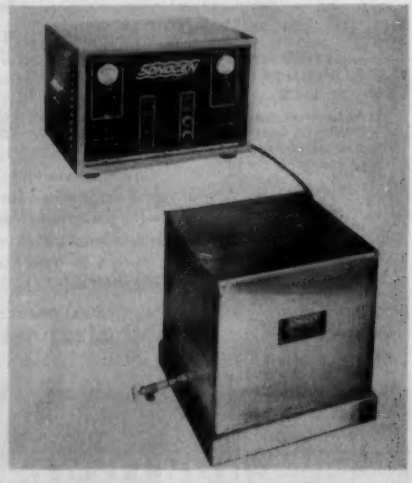
★ ★ ★

Ultrasonic Generator

Manufacturer: Branson Ultrasonic Corp., 26 Brown House Rd., Stamford, Conn.

Description: Model AP-200 Sonogen ultrasonic cleaning generator.

Features: Average power output of 1 kw., peak on pulses of 4 kw. Plugs into standard industrial receptacles. Has one-tube oscillator. Cooling fan

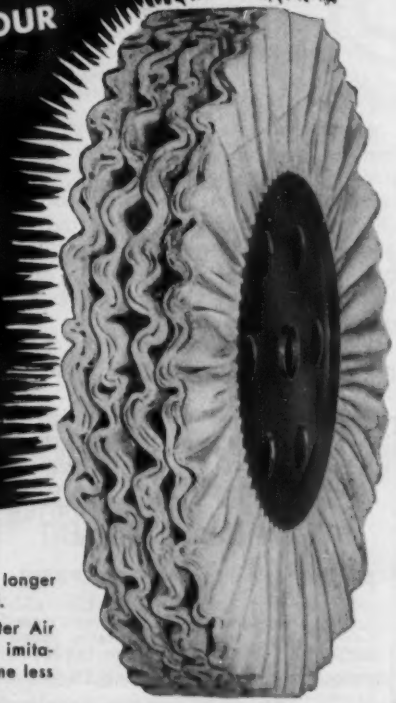


Sonogen Model AP-200 Ultrasonic Generator connected to Type 360 Tank/Transducer.

Schaffner Bias Buffs

your answer for economical performance

- TAILOR MADE FOR YOUR TOUGHEST BUFFING OPERATIONS
- FULLY VENTILATED
- COOLER RUNNING
- LOW COMPOUND CONSUMPTION
- FEWER SECTIONS NEEDED
- GIVES LONGER LIFE



The buff you select is all important—it will mean longer buff life and greater production from a buff wheel.

Specify and buy the proven Schaffner Metal Center Air Cooled bias (type) Buff, and don't be satisfied with imitations. You'll find Schaffner buffs last longer, consume less compound and reduce rejections.

Write us. We'll run a test for you in your own plant and prove our claims.

"Schaffner Bros. make things Shine"
Paul — Bob — Gus

Schaffner

MANUFACTURING COMPANY, INC.

SCHAFFNER CENTER • ROSEWOOD 1-9902 • EMSWORTH PITTSBURGH 2, PA.

* TRIPOLI COMPOUNDS * CHROME COLORING ROUGE * GREEN ROUGE * JEWELERS' ROUGE * CROCUS COMPOUND * STAINLESS STEEL COMPOUNDS * ALUMINUM BUFFING COMPOUNDS * ALL-PURPOSE BUFFING COMPOUNDS * WHITE COLORING COMPOUNDS * NICKEL BUFFING (LIME) * EMERY CAKE * PLASTIC BUFFING COMPOUNDS * TALLOW GREASE STICK * PUMICE GREASE STOCK * POLISHING WHEEL CEMENT * STEEL POLISHING COMPOUNDS

COMPOUNDS MADE IN BAR, SPRAY OR PASTE

For more data circle 393 on Postpaid Card

takes away heat generated in continuous operation. May be equipped with various sizes of immersible or bulkhead-mounted transducers. Transducers with radiating areas up to 360 square inches may be coupled in parallel to one AP-200 generator and mounted along the sides and bottom of the tank for conveyorized processing applications.

Operation: Generator aids in cleaning by supplying 38 kc. of pulsed power to immersed transducer, which converts electrical energy into mechanical vibrations of the same frequency. These vibrations cause cavitation in the cleaning solution, which helps to remove soils from surfaces in contact with the liquids.

Typical Applications: For pilot plant or production use in ultrasonic cleaning and degreasing. Especially helpful for supplying power to ultrasonic cleaning apparatus which uses power in removing oil from sintered parts, blind holes, complicated crevices and so on.

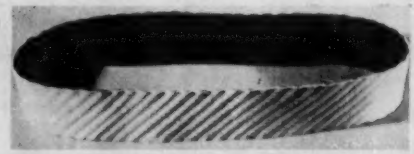
For more data circle **43** on Reader Service Card

Sonogen Model AP-200 Ultrasonic Generator connected to Blakeslee trichlorethylene degreaser. Three immersible transducers are mounted in the bottom of the tank.

★ ★ ★

Polishing Belt

A felt belt with ribbed construction, said to be advantageous in polishing, has been introduced by the Shaw Belting Co., 150 William St., Middletown, Connecticut.



Felt Belt: diagonal ribs give better polish

QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

ALL EQUIPMENT IN STOCK
INSPECTION INVITED

all quoted subject to prior sale.

J. HOLLAND & SONS, INC.
485 KEAP ST., B'KLYN, N. Y., STagg 2-2022

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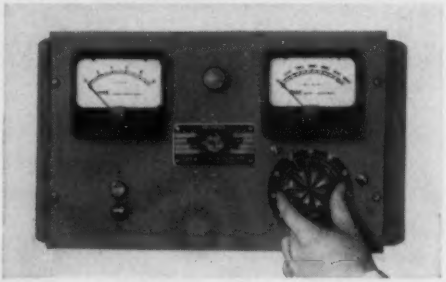
NOW

BALANCED
SINGLE KNOB

STEPLESS CONTROLLED PLATING RECTIFIERS

GERMANIUM
SELENIUM
SILICON
RECTIFIERS

WITH



"Finger-Tip" Control Panel 10" x 18" x 6"

REACTRON MODIMATIC CONTROLS

- STABILIZED OUTPUT VOLTAGE
- SMALL OPERATOR'S PANEL MOUNTS ANYWHERE
- NO FLOOR SPACE
- SMALL INTERCONNECTING WIRES
- "FINGER-TIP" CONTROL
- NO MOVING PARTS
- LOW MAINTENANCE

Controls all phases simultaneously— Avoids possibility of damaging germanium junctions.

The Ther REACTRON MODIMATIC CONTROL gives you instantaneous, perfect, *stepless* control of plating voltage. Stabilized output produces better plating. Single control knob controls all phases simultaneously...No possibility of damaging germanium junctions by improper setting of 22 or 44 position tap switches.

The miniature operator's control panel furnished with all MODIMATIC CONTROLLED rectifiers gives you "finger-tip" control where you want it. Can be mounted right at the plating tank — Requires no floor space — Measures only 10" x 18" x 6" — needs only #14 wires to control panel.

WRITE TODAY for technical study showing the advantages of Reactron VS. tap switch or motor driven variable auto-transformer controls.

It's THER...Whatever your D-C Requirement

THER ELECTRIC & MACHINE WORKS

ESTABLISHED 1915

13A SOUTH JEFFERSON ST. • CHICAGO 6, ILLINOIS

For more data circle 395 on Postpaid Card

The ribbed design of this belt is said to result in cooler operation and less chance of burning or clouding the work.

The diagonal ribs are also said to be helpful in applications where the belt must follow difficult contours, especially on round or half-round shapes.

A laminated layer of Orlon keeps the belt from stretching.

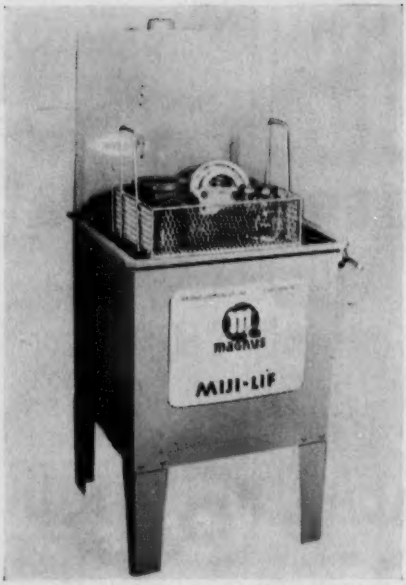
This felt belt is reported to be suitable for a wide variety of polishing operations, and it is available in various sizes.

For more data circle **44** on Reader Service Card

★ ★ ★

Cleaning Machine

The Equipment Division of Magnus Chemical Company, Inc., 208 South Ave., Garwood, N. J., has announced the "Magnus Miji-Lif", a mechanically agitated cleaning machine designed for batch cleaning of metal, glass and plastic parts in solvents, mild acids, and alkalis.



Magnus Chemical's Miji-Lif Cleaning Machine

Up to 75 pounds of work can be cleaned at a time.

This machine can also be used for applying protective coatings to metal parts.

PURE TITANIUM BOLTS—NUTS
Studs - Washers

HEX. HEAD BOLTS

¼ - 20				10 - 24		
¾"	1"	1½"	2"	½"	1"	1½"
.25	.30	.36	.48	.17	.21	.25

Price each in 1,000 lots
1-99 plus .10 ea. 100-999 plus .05 ea.

ROUND HEAD BOLTS

¼ - 20			10 - 24	
Price ea. in 100 lots				
¾"	1"	1¼"	1"	1¼"
.21	.25	.30	.15	.18

1-99 price plus .05 ea.

STUDS			SQUARE NUTS	
¼ - 20			Price in 1,000 lots	
Price in 1,000 lots			¼ - 20	.18
1"	1½"	2"	10 - 24	.13
.18	.20	.22	1-99 plus .05 ea.	
1-99 plus .10 ea.			100-999 plus .02 ea.	
100-999 plus .05 ea.				

DETROIT INDUSTRIAL PROCESS CO.
9301 French Rd., Detroit 13, Mich. WAlnut 1-3800

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ELTEMP
Solves
Temperature Control Problems
The Model T-34 immersion-type thermostat is effective in
ANY KNOWN CHEMICAL
solution within its temperature range (70°-210°F.).
The power element is machined from virgin teflon.
Write Dept. T for full details and prices.
Elkhart Controls Company
Route No. 2 ELKHART, INDIANA

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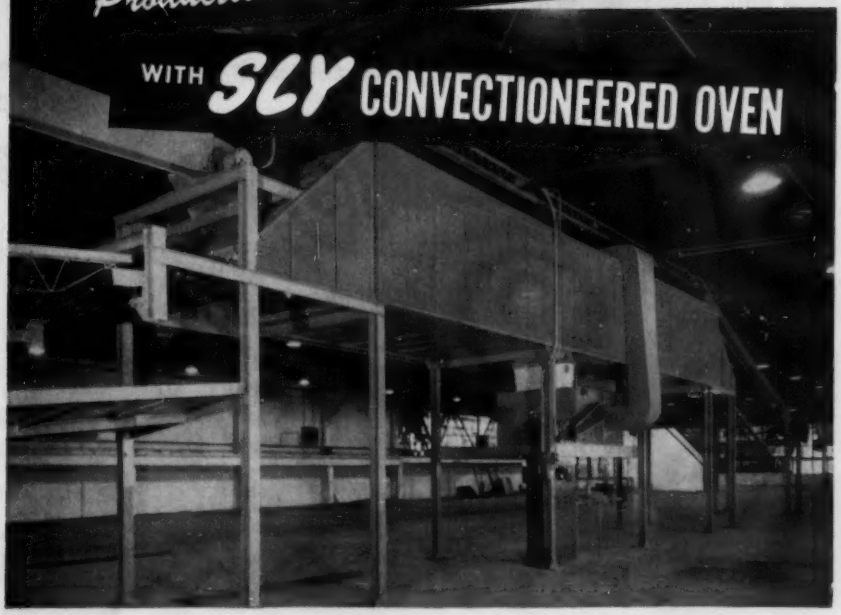
Production and Quality Up!

WITH **SLY** CONVECTIONEERED OVEN



With an increase in business, the Interior Steel Equipment Co. has augmented their paint baking facilities. In doing this they have achieved economies in handling of work while maintaining and even enhancing the quality of their products.

They installed a Sly Convectioneered Oven, 45′ long, 9′ 6″ wide, 6′ 9″ high with semi "A" type sheet metal hoods at the exit and entrance ends to form an efficient heat seal. Beneath the oven is a self-contained 2,500,000 BTU per hour direct gas-fired heating unit.

As aids in achieving excellent finishes on the products are: (1) efficient air distribution over the work (2) temperature uniformity in the baking zone (3) correct exhaust conditions to maintain proper oven atmosphere, and (4) a low overall temperature gradient between supply and recirculation temperatures.

This installation is typical of the careful engineering that goes with all Sly Industrial Ovens. *May we discuss your requirements with you?*

Designers and Manufacturers of: Dust Control Systems, Blast Cleaning Equipment, Tumbling Mills, Industrial Ovens.

THE W. W. SLY MANUFACTURING CO.

SINCE 1874

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle 398 on Postpaid Card

The machine is operated with plant compressed air.

To operate this cleaning machine, a lever is moved to bring the platform out of the tank, so that parts can be inspected, loaded, or unloaded.

Then a second flick of the lever lowers the platform to the bottom of the tank, where the work is automatically agitated up and down in the solution, "shearing" the dirt from the parts.

The Miji-Lif Cleaning Machine is available in a 30-gallon size with a working platform of 21 by 18 inches.

For more data circle **45** on Reader Service Card

★ ★ ★

Phosphatizing Cleaner

Manufacturer: Bell-Ray Chemical Corporation, 3132 W. Garfield Ave., Milwaukee 8, Wisconsin.

Material: Chem-Bond, a phosphatizing cleaner.

Properties: Removes rust, corrosion and mill oil. Retards corrosion and oxidation by depositing a phosphate coating, to which paint, enamel and lacquer will adhere. Phosphate coating has improved impact resistance. Solution rinses off easily.

Application Procedure: Applied by dipping, brush-on wipe off, or spray. Rinse with water.

Typical Applications: Cleaning and phosphatizing metals in one operation. Same solution may be used for ferrous metals, zinc-base die castings, galvanized iron, aluminum, copper and brass.

For more data circle **46** on Reader Service Card

★ ★ ★

Anode Container

Manufacturer: Equipment Div., Wagner Brothers, Inc., 7800 Dix Rd., Detroit, Mich.

Equipment: An anode container that eliminates jamming or "hanging up" of anodes employed in plating operations.

Description: Welded together, this container has vertical members and supporting rings arranged to provide maximum weight distribution in supporting heavy anodes. Lower portion of unit and bottom are heavily reinforced. Angle-type spine bends under bottom of container and runs the full length of the unit to end up as the hook at the top.

Wagner Anode Container: ends "hang ups"

Manufactured to meet each user's' requirements.

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Sodium-Copper Cyanide Double Salt

Manufacturer: E. I. du Pont de Nemours & Co., Inc., Electrochemicals Dept., Wilmington 98, Del.

Material: Sodium-copper cyanide double salt, for use in copper plating solutions formulated with sodium cyanide.

Uses: Facilitates makeup or replenishment of copper plating solutions by eliminating the several steps required to dissolve copper cyanide properly. Reduces handling of chemicals, helps to avoid errors.

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★ ★ ★

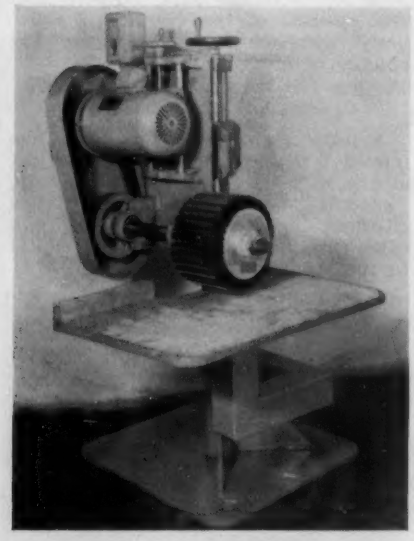
Variable-Speed Polisher

Manufacturer: Grinding & Polishing Machinery Corporation, 2530-P Winthrop Ave., Indianapolis 5, Ind.

Description: A universally adjustable polishing stand, equipped with a variable-speed drive.

Typical Applications: Used with buffs, wire brushes and other types of sanding and polishing devices.

For more data circle **159** on Reader Service Card

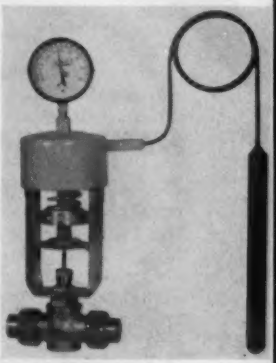


Vennegut Adjustable Stand: variable-speed

★ ★ ★

Temperature Regulator

Development of a self-operated temperature regulator for use in metal finishing processes has been announced by the Fulton Sylphon Division of Robertshaw-Fulton Controls Company.



Temperature Regulator

This control is designed to provide accurate temperature regulation in plating, bonderizing, anodizing, cleaning, pickling and rinsing solutions.

The use of special metals and plastics in the regulator, it is stated, ensures long operating life and dependable performance. A chemical-resistant plastic has been used to coat the temperature-sensing bulb and connecting tube. Stainless steel is used for the frame. The body of the valve is made of a non-ferrous metal.

The temperature regulator, called No. PA-2, is available in seven valve sizes from ¼ inch to 1½ inches. Several bulb sizes are also available.

The regulator is equipped with a hand wheel to adjust temperatures within the limits of a selected range. A large thermometer is at the crown of the regulator.

To describe the control in detail a brochure is available from Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Box 400, Knoxville, Tenn.

For more data circle **158** on Reader Service Card

Page 140

News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . necrology . . .

NEW PLANTS

A new development center will be constructed at Springdale, Pa., for the Paint and Brush Division of **Pittsburgh Plate Glass Company.**

Construction on the two-story structure will begin immediately. Estimated completion date is September, 1958.

The development center will be used to develop processes capable of efficiently producing newly developed paint, plastic, and brush materials. Development work will be continued also on existing processes in an effort to attain more efficient and economical production of products now in commercial use.

Operation of the new Development Center will be under the general supervision of **Paul R. Croll,** general manager of technology for the Paint and Brush Division.

Peninsular Metal Products Corporation, of Ferndale, Mich., has acquired all of the outstanding stock of the **George L. Nankervis Company,** of Detroit, supplier of metal finishing equipment.

S. W. Sorensen, Jr., president of Peninsular Metal Products said the Nankervis Company will be operated as a wholly owned but independent subsidiary of Peninsular Metal Products. Mr. Sorensen said the personnel and policies of the Nankervis Company will not be affected by the change of ownership.

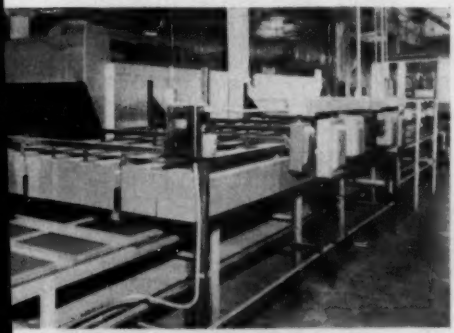
★ ★ ★

Neilson Chemical Company has moved into new plant and office facilities at 2300 Gainsboro, Detroit 20, Ferndale, Mich. The company makes cleaners, phosphate coatings, and other products for preparing metal for painting and electroplating.

Neilson Chemical Company's new plant and office, recently built in Detroit, Michigan

COMPANIES

A driQuik ceramic-type electric infra-red oven is used to speed drying of ink sealer that is roller coated over printed wood grains at the Memphis Furniture Mfg. Co., Memphis, Tenn. The oven is manufactured by the **Dry Clime Lamp Corp.**, Greensburg, Ind.



This driQuik ceramic-type infrared oven is used to speed drying of ink sealer that is roller coated on wood-grained panels at the Memphis Furniture Mfg. Co. (Photo courtesy Dry Clime Lamp Corp., Greensburg, Indiana.)

Two 7-foot sections of the driQuik oven are used to do the work.

These ovens have temperature controls which may be set from 0 to 100 per cent of rated power. They and the conveyor are set for one minute and five seconds flash off, 42 seconds of heat and 35 seconds of cooling.

Temperature may be changed by the turn of a dial on the temperature control whenever the oven is used for a different operation.

★ ★ ★

Mariano Ranno, president of the Imperial Plating Co., New York, has been appointed chairman of the Plating Division of the 1958 National Foundation for Infantile Paralysis Campaign, according to an announcement by Roy W. Moore, chairman of the board of Canada Dry Ginger Ale, Inc., and general chairman of the 1958 New York March of Dimes drive.

In accepting the Divisional Chairmanship, Mr. Ranno called upon the entire Plating Industry to join in an all-out effort to aid the March of Dimes.

★ ★ ★

Haveg Industries, Inc., has announced the acquisition, as a wholly owned subsidiary, of **Reinhold Engineering and Plastics Co., Inc.,** of Norwalk, California, producers and fabricators of plastics for the aircraft missile industry, as well as chemical and corrosion-resistant equipment.

Reinhold, originally founded in 1928, employs 220 employees, operating 40,000 square feet of modern plant facilities in Norwalk, Calif.

Reinhold will be operated as a Haveg subsidiary, forming a base for expansion of Haveg facilities on the West Coast, including complete engineering and production. The general

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custom molding business of Reinhold will be continued following complete integration of engineering features.

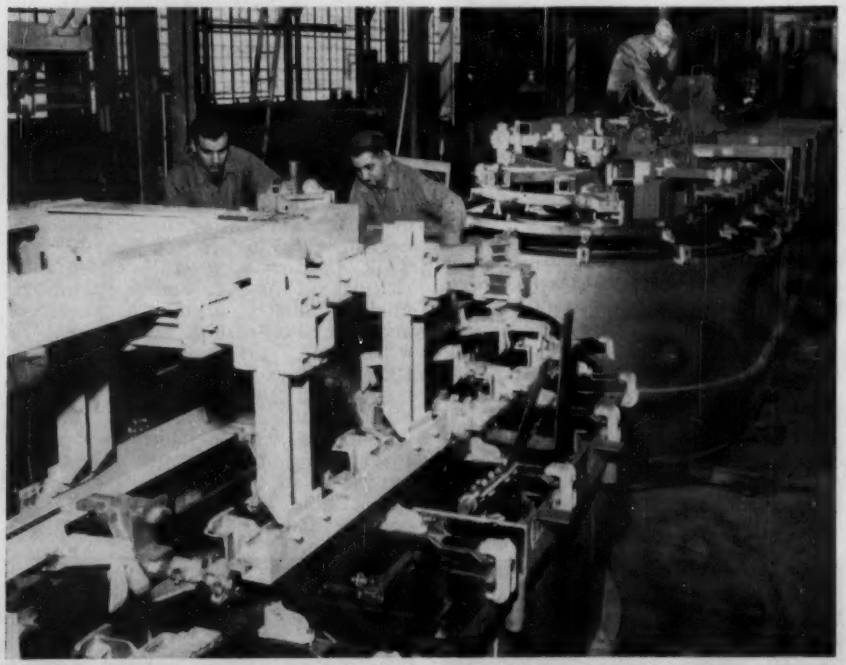
★ ★ ★

The Fall Sales Management Conference of **Kelite Corporation,** manufacturer of industrial chemicals and steam cleaning equipment, was held recently at Kelite's Los Angeles office.

Taking part in the conference were all sales management personnel from the United States and Canada. William Sorensen, executive vice president and marketing director, presided at the conference.

The theme of the conference was "Strengthening the District Manager in the Performance of His Duties."

Guests at the conference were **Dr. A. Kenneth Graham** of Graham, Savage and Associates, and Victor Gibson, president of Gibson-Kelite Pty., Ltd., Melbourne, Australia. Dr. Graham, an authority in metal cleaning and plating, spoke on the significance of soak cleaning prior to plating. Mr. Gibson described Kelite's Australian operation.



When this paint sprayer (background) completes his job of applying acid-alkali-resistant paint to this and two other automatic plating machines in the Equipment Division of Wagner Brothers Inc., Detroit, a fleet of 10 trucks will deliver the machines (the smallest 48 feet) as well as 38 rectifiers and 13 regulators to IBM's Processing Machines Division, Rochester, Minn. Modular construction of the machines, which will be used by IBM to plate computer components at the rate of 80 to 100 racks per hour, enable them to be "spliced" in half and shipped virtually assembled for production on arrival. (Photo courtesy Equipment Division, Wagner Brothers Inc., Detroit, Michigan.)

A room-temperature spray-type zinc phosphate coating being demonstrated at the Fall Sales Management Conference held recently by Kelite Corporation in Los Angeles. Witnessing the demonstration by a Kelite laboratory worker are (l. to r.) W. J. Hennessy, eastern regional sales manager; Dr. Sam Spring, laboatory director; R. J. Racine, western regional sales manager; and John E. O'Brien, Philadelphia district sales manager.

A special report was given by **Dr. Sam Spring,** Kelite's laboratory director, on the latest government approval of Kelite products, including a non-phenolic paint stripper, an emulsion cleaner, an aqueous base aircraft cleaner, two aluminum brighteners and cleaners, an immersion carbon remover, and a phosphate coating.

Dr. Spring also discussed Kelite's developments in phosphate coatings, including a room-temperature spray-type zinc phosphate coating.

Louis McDonald, Kelite vice president and technical director, announced a product for the removal of soils from auto finishes.

Since the recent adoption of a new trademark and a standard contrasting color combination, Diamond Alkali Company, Cleveland, Ohio is shipping soda ash, grain fumigant, polyvinyl chloride, perchlorethylene, chloroform and other chemicals in improved packages featuring an attractive, uniform "Diamond family look," shown in photo.

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NEW POSITIONS

Election of four key executives of **Diamond Alkali Company,** Cleveland, Ohio, to new management assignments has been announced by Raymond F. Evans, chairman and chief executive officer, following action by the Board of Directors.

A. H. Ingley, vice president-manufacturing for the past nine years and a director of Diamond since April, becomes senior vice president, a newly-created position.

James A. Hughes, treasurer of the company since mid-1955, is now advanced to vice president-administration, also a new post in the Diamond organization.

Donald S. Carmichael, secretary for ten years, is named to the additional post of general counsel.

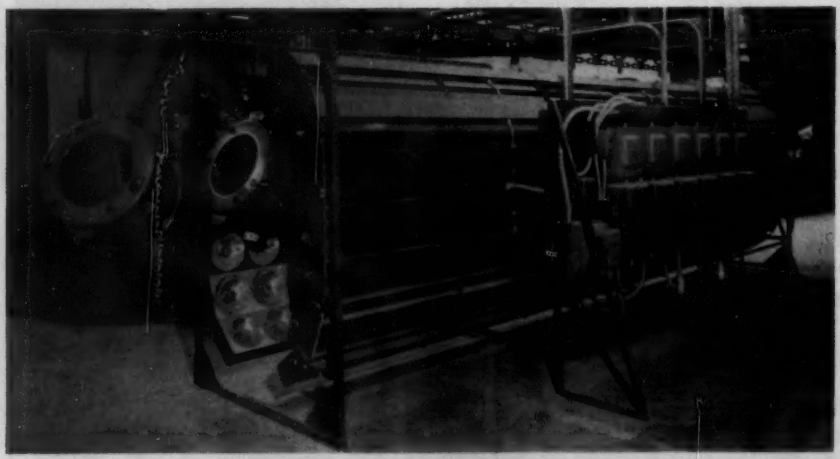
R. H. Armour, assistant treasurer since 1953, succeeds Mr. Hughes as treasurer.

Diamond Alkali has also announced the promotion of **Robert E. Frey,** for the past six months assistant works manager of operations at Diamond Alkali Company's Painesville Plant, to the newly created position of assistant works manager.

At his new post, Mr. Frey will be concerned with employee and public relations as well as operations at Diamond's largest and oldest plant.

★ ★ ★

Joseph W. Agerson, for the past 8 years attached to the controller's staff of Ford Motor Co.'s Foundry Division, has been appointed controller and assistant secretary of **Wagner Brothers Inc.,** Detroit.



Frit is dried on tubs and other parts in an electric infra-red oven only 21 feet long at the Crosley Division of Avco in Nashville, Tenn. In spite of its short length, parts can be raised to 370 deg. F., and temperatures may be set and controlled.

In the process of giving parts a porcelain enamel finish, frit is applied and must be dried before each part goes into the kiln.

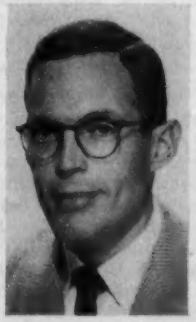
This oven uses lava-coated ceramic type infra-red generators. The temperature is controlled by a cyclical timer for each section, and individual sections of the oven can be operated at different temperatures.

The driQuik infra-red oven used is a product of the Dry Clime Lamp Corporation.

Oakite Products, Inc., manufacturer of industrial cleaning and metal treating compounds, has announced the appointment of two technical service representatives.

Donald R. Dutton, formerly a district sales manager for a large manufacturing firm, has been assigned to Lansing, Michigan. **George D. Findlay, III,** for many years sales manager of a sporting goods firm, is the new Oakite representative in Vermont.

Donald R. Dutton



Geo. D. Findlay, III

William G. Anderson has been appointed advertising and sales promotion manager for **Frederic B. Stevens, Inc.,** according to W. J. Cluff, president.

In his new capacity Mr. Anderson will direct all advertising, promotion and publicity activities for the 75-year-old Stevens Company.

Prior to joining Stevens, he was sales promotion manager for the Fruehauf Trailer Company, Detroit.

William G. Anderson

Al Neeme

E. W. Carlson

Edward L. Carlson, advertising manager of **Oakite Products, Inc.,** has been placed in overall charge of the company's informational efforts in the industrial cleaning and metal finishing fields.

Mr. Carlson, who joined Oakite in 1924 and has served as both copywriter and production manager, was promoted to advertising manager in 1947. In his new capacity he will supervise the company's activities in industrial trade shows and special promotions, as well as trade paper advertising and associated activities.

Michigan Chrome and Chemical Company has announced the appointment of **Al Neeme** as West Coast sales representative. Mr. Neeme has served for a number of years as sales engineer in the Plating Division of Michigan Chrome and Chemical and for two years was assistant manager of the Coating Division.

★ ★ ★

Appointment of **James A. Kessekert** to the newly created position of manager of production planning and scheduling for the Paint and Brush Division of **Pittsburgh Plate Glass Company** has been announced by C. J. Krueger, general manager of manufacturing, paint and brush division.

Mr. Kessekert will transfer to the company's Pittsburgh headquarters from the Milwaukee Paint Division where he had served as assistant to the divisional director since January.

Joseph A. Neubauer has been elected president of **Columbia-Southern Chemical Corporation,** a wholly owned subsidiary of **Pittsburgh Plate Glass Company.**

As president of Columbia-Southern, Mr. Neubauer succeeds Edwin T. Asplundh who has been elected board chairman of the Pittsburgh Plate Glass Company and Columbia-Southern Chemical Corporation.

★ ★ ★

Branson Ultrasonic Corporation, Stamford, Conn., manufacturer of ultrasonic cleaning and testing equipment, has appointed **Mordy M. Rhodes** as sales engineer for the midwestern area. Mr. Rhodes' office, at 5027 N. Harding Avenue, Chicago 25, Ill., will serve northern Illinois, northern Indiana, and all of Iowa, Minnesota, and Wisconsin.

★ ★ ★

William A. Hopkins has been appointed manager of **The Electric Auto-Lite Company's** Bumper Division at Sharonville, Ohic. Mr. Hopkins had been associated with Auto-Lite from 1934 until 1943, when he joined the Manhattan Project during World War II as a consulting engineer on electroplating and metal cleaning problems. His appointment fills the vacancy created by the recent death of Auto-Lite Vice President C. L. Lancaster.

Since World War II, he has gained a wide background in the metal finishing industry. Most recently he was associated with the Bart Manufacturing Corporation of Newark, New Jersey, and associated companies as vice president, manufacturing. He is a member of the American Electroplaters' Society.

★ ★ ★

American Buff Co., Chicago manufacturer of buffs for the metal finishing industry, announces the appointment of **Bob Hulland** as sales and service engineer for the Syracuse, New York area.

★ ★ ★

The Bonded Abrasives Division of **The Carborundum Company,** Niagara Falls, N. Y., has assigned six product managers to serve in liaison capacity between the manufacturing departments and the field sales force. The six managers are **D. H. Currie, G. S. Eisaman, H. M. Newberry, J. W. Ripple, W. W. Barrett,** and **F. J. Miller.**

The product managers, all abrasive engineers, will assist in the sale of assigned groups of commodities which are related to each other by manufacturing process and end use. They will also relay the needs of customers and salesmen to the research and development group and to manufacturing supervision.

★ ★ ★

George T. Hubbell has been elected president and **T. Mark Keefe** executive vice president and treasurer of **The Seymour Mfg. Co.,** Seymour, Conn.

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MacDermid Incorporated, Waterbury, Connecticut, manufacturer of metal cleaning, plating and finishing chemicals, recently announced the appointment of **Fred Johnson** as sales engineer. He has been assigned to assist Cecil Thornton covering the New York State area from Rochester, N. Y.

Fred Johnson

Raymond G. Dargis

MacDermid Western Incorporated, Ferndale, Michigan manufacturer of metal cleaning, plating and finishing chemicals, has recently announced the appointment of **Raymond G. Dargis** as technical sales representative. He has been assigned to the Detroit area.

Mr. Dargis formerly served as chief of the By-Products Division of American Smelting and Refining Co., San Luis Potosi, Mexico. Since then he has been with Pratt & Whitney Aircraft Corporation in the Metallurgical and Chemical Processing Group.

★ ★ ★

H. A. Steinherz has been promoted to the position of manager of engineering and development of **NRC Equipment Corporation.**

Mr. Steinherz, who joined NRC Equipment Corporation in 1955 as a development engineer, was formerly associated with the General Electric Company, where he was a materials engineer concerned with magnetic and semiconductor materials.

Robert Cushman

W. A. McCune, Jr.

Norton Company has created two new positions in the sales management of its Abrasive Division.

Robert Cushman will become manager of Marketing Services. **W. Alexander McCune, Jr.,** will become manager of Field Sales.

★ ★ ★

C. J. O'Sullivan has been assigned to the New York district office of the chemical sales division, **Shell Chemical Corporation.**

Mr. O'Sullivan will be a technical representative, concerned primarily with sales of the company's Epon resins in New York and Long Island.

C. J. O'Sullivan

James E. Kennerly

James E. Kennerly has joined the **Lea Manufacturing Co.,** Waterbury, Connecticut as a member of the laboratory staff.

The transfer of **D. L. Bohon**, from his position as regional sales manager for the West Coast to the home office sales department of The DeVilbiss Company in Toledo has been announced by H. M. Kidd.

Mr. Bohon will be replaced by **George W. Fulton,** who becomes West Coast regional sales manager, with headquarters at the DeVilbiss branch in Los Angeles.

MEETINGS

The 46th Educational Session and Banquet of the **Chicago Branch A.E.S.** will be held at the Conrad Hilton Hotel on Saturday, January 25.

The Educational Session, starting at 2 P.M. in the Waldorf Room, will feature the following subjects and speakers:

"Deep Etching"—by Dr. Neal Berts, director of research, Diversey Corp., Chicago, Ill.

"The Importance of Finishing and Packaging in Sealing"—by Dr. Burleigh B. Gardner, executive director, Social Research, Inc.

"H.A.E. Process for Treatment of Magnesium"—by Dr. Harry A. Evangelides, research metallurgist, Frankford Arsenal.

The banquet, including an excellent floor show, will be held in the Grand Ballroom beginning at 7 P.M.

TRAINING COURSES

A series of technical clinics demonstrating spray decorating techniques and new developments in automatic spray painting machines will be held in five key cities during January, February and March. **Conforming Matrix Corporation** is sponsoring the events, which will be held as follows:

January 9—Hotel Hollenden, Cleveland; January 23—Hotel Van Cleve, Dayton; February 6—Hotel Claypool, Indianapolis; February 27 — Hotel Biltmore, New York City; March 7—Hotel Statler, Hartford, Conn.

There will be sessions at 10:00 in the morning and 2:00 in the afternoon. Each session will include industrial films which show the proper use of spray guns, the care and maintenance of spray equipment, advantages of metal masking techniques, and various types of automatic spray painting machines in use.

There will be a panel of engineers to answer questions and help solve problems in the spray decorating field. It will be comprised of **Hamilton E. MacArthur, Leo McHue, Charles Van Dusen, David Simmons, Joseph Kurtz, A. M. McIntire** and **Gerald Minnick.**

Guest cards will be sent to those addressing Conforming Matrix Corporation, 356 Factories Building, Toledo 2, Ohio.

HONORS

Walter C. Sweet, Oakite technical service representative in Minneapolis since 1946, has received the 1957 David C. Ball Award for Distinguished Oakite Service.

The award, named in honor of the founder of **Oakite Products, Inc.,** manufacturer of industrial cleaning and related compounds, is given annually to the Oakite representative who "best carries forward with his customers the highest ideal of Oakite service."

Mr. Sweet, who was selected from

Walter C. Sweet (left) receives 1957 David C. Ball Award from John A. Carter (right)

A. E. S. 45TH ANNUAL CONVENTION,
Sheraton-Gibson Hotel, Cincinnati, Ohio, May 18-22, 1958
"Progress Through Education"

the company's 227-man field organization, received the award from John A. Carter, president, at Oakite's recent sales conference in Chicago.

SOCIETIES

The **First Annual Fall Meeting and Technical Conference** of the **Society of Vacuum Coaters** has been held at the Statler Hotel in Cleveland, Ohio, on October 30 and 31. Approximately 150 attended.

Officers were elected, as follows: president, T. LaBounty, Logo, Inc.; vice president, C. Northrup, Consolidated Electrodynamics Corp.; secretary, R. Lux, General Electric Co.; treasurer, L. Storms, Red Spot Paint and Varnish Co. Other members of the executive committee include M. Adler, F. J. Stokes Co.; F. Dalton, Vac-Art, Inc.; H. Farrow, National Research Corp.; B. Hineline, Haloid Co.; C. Matilo, Vacuum Metallizers; J. Sims, Delco Remy.

Committee chairmen elected are as follows: finance, L. Storms; membership, M. Adler; constitution, B. Hineline; publicity, C. Northrup; standards, L. Storms; program, F. Gruen.

The next annual fall meeting was scheduled for the end of October, 1958, in Detroit, Michigan.

The executive committee requested papers for this next meeting on the technical and practical applications and tchniques involved in functional and decorative vapor deposition. Those interested are asked to send a 100-word abstract as soon as possible to F. Gruen, program chairman, Syn-Cote Chemical Corporation, Long Island City, New York.

Reprints of technical papers presented at the 1957 Meeting are available on request from Chester Northrup, Consolidated Electrodynamics Corporation, Rochester, N. Y.

Fig. 1—Carl O. Durbin, Chrysler Corp., in his capacity as December Party Chairman, welcomed members and guests to the 20th Annual Educational Session and Dinner Dance, held by the Detroit Branch, A.E.S., on Dec. 6 and 7. Glenn H. Friedt, Jr., (right), president of the Detroit Branch, was master of ceremonies for this year's annual meeting.

Fig. 2—Dr. W. Andrew Wesley, International Nickel Co., third vice president of the A.E.S., addressed the Detroit group on the subject, "Nickel-Chromium Versus the Atmosphere." Dr. Wesley cited the conditions under which corrosion of nickel plated steel could take place, and mentioned the effects of alloying materials, treatments, plating processes.

Fig. 3—Dr. Wesley (left) pointed out that the character of the nickel coating and its finish affects the rate of corrosion, as does the thickness of chromium applied over the nickel. Henry Mahlstedt, Metal & Thermit Corp., (center) commented further on the effects of chromium plate thickness and structure. Francis T. Eddy (right), Technicraft Laboratories, Inc., president of the A.E.S., served as technical chairman for the annual meeting.

Fig. 4—(Left to right): J. D. Thomas, General Motors Research, educational chairman for the Detroit Branch; Glenn H. Friedt, Jr., United Platers, Inc., Detroit Branch president; Francis T. Eddy, A.E.S. president; Dr. W. Andrew Wesley, speaker for the Detroit Branch Annual Educational Session. The Detroit meeting attracted visitors from the New York area, New England, the Midwest, and such faraway points as Adel, Georgia and Kansas City, Missouri. The Cincinnati Branch displayed the poster (left of photo) to publicize the 1958 A.E.S. Annual Convention, to be held next May. Ezra Blount, PRODUCTS FINISHING, co-chairman of the 1958 Convention Committee, issued a special invitation on behalf of the Cincinnati Convention Committee. (Photographs by PRODUCTS FINISHING).

NECROLOGY

T. V. DuBois, founder and president of the **DuBois Co., Inc.,** Cincinnati, manufacturer of chemical cleaning compounds for institutions and industry, died of a heart condition.

Mr. DuBois, who founded the company in 1920, built a business which extends in all states, having manufacturing facilities in Cincinnati, Los Angeles and Dallas.

T. V. DuBois

R. O. Hull

Richard O. Hull, founder and president of **R. O. Hull & Company, Inc.,** was stricken with coronary thrombosis and died at Lakewood Hospital November 29. He was 52 years old.

An authority on electroplating, Mr. Hull has more than 30 patents pertaining to the plating and testing of tin, copper, zinc, cadmium, and other metals. His invention of the Hull Cell gained him world-wide recognition through its use as the standard control and evaluation method for plating baths.

A graduate of the University of Colorado with special honors, Mr. Hull worked under Dr. William Blum at the National Bureau of Standards while taking graduate work at George Washington University. He became an authority on the deposition of copper while with RCA Victor Corp. He was associated with Du Pont from 1933 until 1944, when he formed his own company.

Mr. Hull supported a number of philanthropic activities, including the Engineering Development Fund for aid to students in Chemical Engineering or for chemical research at the University of Colorado. He was a member of the American Electroplaters' Society, British Institute of Metal Finishing, Electrochemical Society, American Institute of Chemical Engineers, Alpha Chi Sigma and Tau Beta Pi.

★ ★ ★

Clarence L. Van Derau, a past president of the American Electroplaters' Society, died in Mansfield, Ohio, Dec. 24. Mr. Van Derau had retired Sept. 1 as general works manager of Westinghouse appliance division factories in Mansfield, Newark and Columbus, Ohio and East Springfield, Mass.

MEETINGS of INTEREST to FINISHERS

Jan. 11. Interim Meeting, A.E.S., Hotel Marott, Indianapolis, Ind.

Jan. 25. 45th Annual Educational Session and Banquet, Chicago Branch, A.E.S., Conrad Hilton Hotel, Chicago, Illinois.

Feb. 1. Annual Educational Session and Banquet, New York Branch, A.E.S., Hotel Statler, New York, N. Y.

Feb. 3-6. National Industrial Electric Heating Conference, Netherland-Hilton Hotel, Cincinnati, Ohio.

Feb. 10-14. Committee Week, American Society for Testing Materials, Statler Hotel, St. Louis, Mo.

Feb. 14-15. Third Annual Technical Session and Banquet, Southeastern Branch, A.E.S., Dinkler Plaza Hotel, Atlanta, Ga.

Mar. 1. 12th Annual Educational Session and Dinner Dance, Dayton Branch, A.E.S., Hotel Biltmore, Dayton, Ohio.

May 4. Annual Meeting, Toronto Branch, A.E.S., Sheraton Brock Hotel, Niagara Falls, Ontario.

May 19-22, 1958. 45th Annual Convention, A.E.S., Hotel Sheraton-Gibson, Cincinnati, Ohio.

For Free Literature Circle Numbers on Card Inside Front Cover

PRODUCT LITERATURE

48. Greaseless Buffing Compounds
Data on Atlantic Greaseless Compounds. The Atlantic Compound Co., 1862 Baldwin St., Waterbury, Conn.

49. Wood Tanks
Specifications, information, descriptions: wood tanks for liquid processing. Kalamazoo Tank & Silo Co., 1571 Harrison St., Kalamazoo, Mich.

50. Fixture-Mounted Barrel Finishing
Information on the Spin-Finish method of pre-plate finishing. Grav-I-Flo Corporation, Dept. PF, 400 Norwood Ave., Sturgis, Mich.

51. Drum Rotator
Bulletin No. 155 gives facts on Model 200 Variable-Speed Drum Rotator. Morse Manufacturing Co., Inc., 765 W. Manlius St., East Syracuse, N. Y.

52. Degreasers
Information on a line of vapor degreasers that ranges from small bench and barrel-type units to large, high-capacity degreasers. Armstrong & White, Cheswick, Pa.

53. Felt Wheels
Information on felt polishing wheels and bobs, used for producing highly polished surfaces. Bacon Felt Co., 447 W. Water St., Taunton, Mass.

54. Washing Machines
Literature describes a line of metal parts washing and surface-treatment machines. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

55. Tack Cloth
How to produce a higher-quality finish by using chemically treated cloths to wipe off dust and dirt just prior to paint finishing. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

56. Buffing and Polishing Compositions
Information on Buckingham buffing and polishing compositions. The Buckingham Products Co., 14100 Fullerton Ave., Detroit 27, Mich.

57. Complete Finishing Systems
Catalog describes ovens, heaters, air-make-up systems, spray booths and washers. Burdett Manufacturing Co., 4916 S. Monitor Ave., Chicago 38, Ill.

58. Polishing Machines
Information on tandem roll horizontal machines for cut-down and finishing of sheets, plates, extrusions, trim, etc. Central Machine Wks., 74 Commercial St., Worcester 8, Mass.

59. Conveyorized Painting
Literature on cleaning, painting and baking equipment. Cincinnati Cleaning & Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio.

60. Quartz Ovens
Data on ovens equipped with quartz heating elements, designed to emit that part of the spectrum most readily absorbed by paints. Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

61. Rhodium Plating Solutions
Literature describes company's line of rhodium plating solutions. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

62. Cleaner
Literature on Cowles NS cleaner. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

63. Heating Process Solutions
A 52-page book gives technical information on the Dean Thermo-Panel Coil. Dean Thermo-Panel Coil Div., Dean Products, Inc., 622 Franklin Ave., Brooklyn 38, N. Y.

64. Sanding Machine
Information on air-operated portable sanding machines. Detroit Surfacing Machine Co., 1266 E. Eight Mile Rd., Detroit 20, Mich.

65. Paint Hose
Information on a paint hose made to withstand solvents commonly used in paints. DeVilbiss Co., Dept. 331-A, Toledo 1, Ohio.

66. "The Story of Diamond Chemicals"
Graphically depicting in word and picture its diverse, growing family of chemical products for industry and agriculture, Diamond Alkali Company, Cleveland, Ohio, has published the fifth edition of The Story of Diamond Chemicals —Chemicals You Live By. Highlighting the important contributions of Diamond organic and inorganic chemicals to building a better America through chemical progress, this newly revised and enlarged, 32-page booklet presents a panoramic picture of these basic materials, their principal applications, and their production. Diamond Alkali Company, Public Relations Department, 300 Union Commerce Building, Cleveland 14, Ohio.

67. Infrared Oven Panels
Engineering data on infrared oven panels that can be assembled to make a baking or drying section of almost any shape or size. Dry Clime Lamp Corp., Greensburg, Indiana.

68. Tumbling Abrasives
Folder describes complete line of aluminum oxide tumbling abrasives. Exolon Co., 943 E. Niagara, Tonawanda, N. Y.

69. Quartz Ovens
Brochure No. Q-3-76 describes Fannon Quartz Infra-Red Ovens. Includes discussion of efficiency, performance, features. Photographs show typical installations. John J. Fannon Products Co., 3000 E. Woodbridge, Detroit, Mich.

70. Bright Nickel
Literature on Harshaw Nubrite, a bright nickel solution that is said to have excellent leveling properties; plate out bright over a wide range; have high tolerance to impurities; produce better brightness with thinner deposits; and remain ductile after long operation. The Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

71. Abrasive Belt Polishing Machines
Information on Hill Acme abrasive belt polishing machines for polishing flat surfaces of ferrous and nonferrous metals. The Hill Acme Co., 1201 W. 65th St., Cleveland 2, Ohio.

72. Spray Booth Filters
Information on Delpark Paint Spray Booth Filters for removing the overspray paint particles from water used in the water curtains of water-wash spray booths. Industrial Filtration Co., 166 Industrial Ave., Lebanon, Ind.

73. Buffers and Polishers
Bulletin C-10 on Standard buffing and polishing machines includes information on the "Speedial," which permits selection of any speed between 1,500 and 3,000 r.p.m. instantly. Standard Electrical Tool Co., 2518 River Rd., Cincinnati 4, Ohio.

74. Ovens
Catalog describes and illustrates various types and sizes of paint-baking ovens. Lanly Co., 760 Prospect Ave., Cleveland, Ohio.

75. Primer
Information on the advantages of Napry Red Primer. Lowe Bros. Co., 424 E. Third St., Dayton 2, Ohio.

76. Pearlescent Finishes
Information on Nacromer YNC, an additive that is used in standard organic finishes to produce a pearlescent finish. The Mearl Corporation, 124 E. 40th St., New York 16, N. Y.

77. Phosphatizing Process
Information on the Metacote process, which is said to clean, phosphatize and rustproof in the same operation. Metasurf Corp., 12830 Eaton Ave., Detroit 27, Mich.

78. Corrosion-Resistant Drums
Data on drums coated inside and out with corrosion-resistant Miccrosol. Michigan Chrome & Chemical Co., 8615 Grinnell Ave., Detroit 13, Mich.

79. Paint Rejuvenator
Data sheet describes various sizes and types of apparatus for shaking containers of paint so as to mix the contents without removing the lids. Miracle Paint Rejuvenator Co., 127 E. 9th St., St. Paul 1, Minn.

80. Rust Remover
Description of Metalprep Rust Remover. Neilson Chemical Co., 2302 Gainsboro, Detroit 20, Ferndale, Mich.

81. Anodes
Information on copper, nickel and zinc anodes. New Jersey Metals Co., 724 Rockefeller St., Elizabeth 2, N. J.

82. Aluminum Cleaners
Literature on a line of cleaners and etching compounds formulated specifically for use on aluminum. Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Mich.

83. Tumbling Abrasives
Literature on Norton tumbling abrasives. Norton Co., Abrasives Div., Worcester 6, Mass.

84. Brass Plating
Technical bulletin on the True Brite brass plating process. True Brite Chemical Products Co., Box 31, Oakville, Conn.

85. Aluminum Corrosion Protection
Form A-6790 describes the Bonderite 700 Series of conversion coatings for protection of aluminum from corrosion. This bulletin describes methods of application, shows color produced, discusses applications, demonstrates corrosion protection imparted by this coating. Parker Rust Proof Co., 2172 E. Milwaukee, Detroit 11, Mich.

86. Copper and Nickel Sulfate
Information on Triangle Brand copper and nickel sulfates, for use as sources of copper and nickel in plating. Phelps Dodge Refining Corp., 300 Park Ave., New York 22, N. Y.

87. Paint Arrestors
Information on RP Paint Arrestors, which filter out overspray paint from spray booth exhaust air, are easily replaceable. Research Products Corp., Dept. 38, Madison 10, Wisconsin.

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88. Fire-Resistant Buffs
Literature on buffs made by a process that makes them have better resistance to fire. Schaffner Manufacturing Co., Inc., Emsworth, Pittsburgh 2, Pa.

89. Filter Pumps
Data on filter pumps made of corrosion-resistant alloys for every electroplating and industrial solution from pH 0 to pH 14. Sethco Mfg. Co., 2292 Babylon Turnpike, Merrick, L. I., N. Y.

90. Why Hot Spray?
Booklet includes detailed case-history facts and figures on hot-spray benefits. Spee-Flo Manufacturing Corp., Dept. PF-35, 720 Polk Ave., Houston, Texas.

91. Buffing Compound
Data on the advantages of using Stutz Liquispray buffing compound. The Stutz Co., 4410 Carroll Ave., Chicago 24, Ill.

92. Air Sanders
Data on a line of pneumatically operated sanding machines. Sundstrand Magnetic Pneumatic Products, Div. of Sundstrand Machine Tool Co., 1020 Ninth St., Rockford, Illinois.

93. Primer
Data on Gripalloy, a satin-sheen primer in black and colors. Tenax Finishing Products Co., Newark 5, New Jersey.

94. Plating Rectifiers
Technical study shows the advantages of Ther Reactron Modimatic Controls for producing stepless control of rectifiers. Ther Electric & Machine Works, 13A S. Jefferson St., Chicago 6, Ill.

95. Anti-Mist Additive
Technical Bulletin CR-HT describes Zero-Mist HT for chromium plating baths, a surface active additive for chromium plating baths. This additive is said to produce a foam blanket on chromium plating baths that will eliminate mist and spray, regardless of operating temperature. Udylite Corp., Detroit 11, Mich.

96. Hardness Tester
Volume 4, No. 23 of the "Gardner Newsletter" describes the Gardner Hardness Tester, an instrument for testing the hardness and drying time of coating materials. Gardner Laboratory, Inc., P. O. Box 5728 PF, Bethesda 14, Md.

97. Portable Filter
Two-page bulletin describes the portable Dincalux Plating Solution Filter, which is suitable for removing impurities from a wide variety of plating solutions. Bulletin DF-100 gives complete specifications and lists important features of this filter. Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

98. Chemical-Resistant Clothing
Catalog gives complete data on acid- and caustic-resistant clothing. Worklon, Inc., Dept. PF, 253 W. 28th St., New York 1, New York.

99. Better Paint Adherence
Booklet describes phosphate coatings for spray and immersion application. Gives information on operating conditions, typical cleaning and conditioning cycles. Detrex Chemical Industries, Inc., Box 501, Dept. A-1002, Detroit 32, Mich.

100. Vapor Degreasing
Booklet discusses in detail cleaning cycles and types of degreasing equipment; gives cleaning and maintenance tips for operators; includes data on safety factors and typical problems in vapor degreasing. Dow Chemical Co., Dept. AL 610 L-3, Midland, Mich.

101. Abrasive Belt Finishing Machine
Data sheet describes advantages of Timesaver Speedbelt 12 abrasive belt polishing machine. Timesaver Sanders, P. O. Box 7446, Robbinsdale Sta., Minneapolis 22, Minn.

102. Automatic Plating Machine
Bulletin No. 61. A detailed description of Stevens Automatic Rack Processing and Plating Machines. Includes photographs of typical installations. Frederic B. Stevens, Inc., 1800 Eighteenth St., Detroit 16, Mich.

103. Burnishing Compound
Service Report describes Oakite FM 103, a specially formulated compound that is said to improve brightness of brass, copper, nickel-silver, gold and mild and hardened steel parts. It is designed to produce good results with media or with self-tumbling work. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

104. Roller Coating
Data sheet describes how a roller coating machine is used to prevent corrosion of propeller airfoil surfaces. Gasway Corp., 6463 N. Ravenswood Ave., Chicago 26, Ill.

105. Activating Acid Dip
Technical Data Sheet No. 43 describes Metex M-629, a water-soluble dry acid powder that can be used to make up an acid activator for use before plating steel, brass, copper or zinc-base die castings, or as a pickle for steel. MacDermid, Inc., Waterbury 20, Conn.

106. Aluminum Smut Removal
Folder tells how Diversey 514 Cleaner can be used to advantage in removing smut and deoxidizing aluminum. Diversey Corp., 1820 Roscoe St., Chicago 13, Illinois.

107. Pogo Pump
Bulletin 707 describes and illustrates the Binks Pogo Pump, an air-operated material-handling pump that can be used to pump materials direct from the container. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

108. Black Wax
Data sheet tells about Rollo Black Wax, a final finish for black oxided and phosphatized pieces that imparts a deeper luster. Rollo Chemical Co., 9239 N. Knight Rd., Des Plaines, Ill.

109. Metalworking Chemicals, Processes
Data sheet summarizes company's products for the metals industry. Includes descriptions of products for paint bonding, protection of friction surfaces, rustproofing, drawing and cold forming, pickling, copper coating, cleaning and removing rust. American Chemical Paint Co., Ambler 14, Pa.

110. How Much Cleaning Compound?
Data sheet gives details on the Econometer, an instrument that tells at a glance whether the concentration of cleaning compound in a tank is too high, too low, or just right. The DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

111. Buffing and Polishing Machinery
Catalog 90 describes abrasive belt machines, dust and mist collectors, polishing and buffing lathes, backstand idlers, other products. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

112. Tumbling Compounds
Folder describes 10 different tumbling compounds. Grand Rapids Tumbling Supply Corp., 1750 Elizabeth, N.W., Grand Rapids 4, Mich.

113. Acid Copper Plating Process
Technical paper describes Cusol, an acid copper plating process said to produce smoother, more ductile deposits. Process is of special interest to printed circuit manufacturers. Sel-Rex Corporation, Dept. PF, Nutley 10, N. J.

114. Solution-Level Control
Details on a device that will automatically control the level of a solution in a tank within ⅜ inch. Elkhart Controls Co., Route No. 2, Elkhart, Indiana.

115. Automatic Viscosity Control
Booklet includes diagrams and specifications to show how the Bendix Ultra-Viscoson system automatically controls viscosity continuously by adding the right amount of thinner and coating material, as needed. Cincinnati Div., Bendix Aviation Corp., 3130 Wasson Rd., Cincinnati 8, Ohio.

116. Hard, Bright Gold
Folder gives general data and operating procedures for Technic HG Hard Bright Gold plating solution. Technic, Inc., Providence 1, R. I.

117. Automatic Polishing
Data on automatic polishing and buffing machines with automatic wheel-wear compensation. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, Mich.

118. Aluminum Coatings
Literature describes Iridite coatings for aluminum alloys. Will produce clear, iridescent, yellow and brown coatings. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Md.

119. Clean Plating Solutions
Catalog describes Alsop filtration units for removing impurities from plating solutions. Alsop Engineering Corp., 1211 Keen St., Millidale, Conn.

120. Tank Linings
Complete information on Amer-Plate polyvinyl chloride sheet for lining plating and processing tanks. Amercoat Corp., Dept. EA, 4809 Firestone Blvd., South Gate, Calif.

121. Demineralizers
Catalog 127-A illustrates Barnstead's complete line of water demineralizers and presents factual information that can help to reduce waste and improve quality. Barnstead Still & Demineralizer Co., 12 Lanesville Terrace, Boston 31, Mass.

122. Automatic Barrel Plater
Information on Belke's full-automatic barrel plating machine. Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Ill.

123. Water-Based Spray Booth Coating
Data on Liquid Envelope No. 15-10 Emulsion, a water-based strippable spray booth coating. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, New Jersey.

124. Pre-Cut Spray Masks
Bulletin 160-C describes pre-cut masks for spray painting, tumbling, etc. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wisconsin.

125. Heavy-Duty Coating
Bulletin E-900 describes a one-coat heavy-duty protective coating for structural steel, tanks, stacks, walls and floors, other applications where corrosion is a problem. The Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

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126. Contact Wheel
Complete information on the R-58 sectional rubber contact wheel, a wheel that is said to have excellent conformability. Chicago Rubber Co., Inc., 651 S. Market St., Waukegan, Ill.

127. Conveyorized Painting
Bulletin 51C contains 16 pages on modern ways to achieve better finishes, faster production and smoother handling of metal products. Despatch Oven Co., 619 S.E. Eighth St., Minneapolis 14, Minn.

128. Metal Strippers
Data on various metal stripping compounds that remove the plated coating without disturbing the basis metal. Enthone, Inc., Dept. PF-1, 442 Elm St., New Haven 11, Conn.

129. Prevent Wear on Buffing Fixtures
General information folder tells about Fusecoating buffing fixtures to prevent wear by abrasion. Fusion Metal Coating Co., 25493 W. Eight Mile Rd., Detroit 19, Mich.

130. Tumbling Barrels
Catalog describes and illustrates a complete line of tumbling barrels. Henderson Brothers Company, 134 S. Leonard St., Waterbury, Conn.

131. Rinse Aid
Information on Rins-Aid, an additive for rinse water. It prevents staining and tarnishing and hastens drying. R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

132. Filter
Bulletin 123-1155 describes Industrial Tubular Filters, their advantages and applications. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Illinois.

133. Ovens
"Ovens for Industry" catalog describes and illustrates a complete line of industrial ovens. The Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

134. Conveyor Line Paint Stripping
Full information on a production line method of stripping paint from hooks, shields, and other conveyor-line apparatus. Industrial Cleaning Div., Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

135. Degreasers
Folder describes complete line of degreasers: laboratory, two-dip, three-dip, vapor-spray, barrel type, automatic, semi-automatic. Mechanical Process Co., Inc., 392 Valley St., South Orange, N. J.

136. Printed Circuits
Information on silk screens and ink for making better printed circuits. Naz-Dar Company, 461 Milwaukee Ave., Chicago 10, Ill.

137. Cleaners
Information on various specialized cleaning materials. Pennsalt Chemicals Corp., Dept. 515, 3 Penn Center Plaza, Philadelphia 2, Pa.

138. Vapor Degreasers
Catalog describes complete line of vapor degreasers, including the Rotomatic degreaser with liquid dip. Phillips Mfg. Co., 3457 W. Touhy Ave., Chicago 45, Ill.

139. Industrial Gloves
Catalog describes industrial gloves made for various specific requirements and applications. Pioneer Rubber Co., 285 Tiffin Rd., Willard, Ohio.

140. Continuous Stripping
Complete technical information on RAP Tank Solvent No. 52, which is especially formulated to remove paint from conveyor hooks as they travel through a tank. Pockrandt, Inc., 1108 Marquette St., Bay City, Mich.

141. Flocking Machine
Bulletin outlines operating details, gives complete data on Peco Model 7 Flocking Machine. Progressive Equipment Co., 8629 Mackinaw at Grand River, Detroit 4, Mich.

142. Zinc Plating Chemicals
Technical bulletin on Promat zinc plating materials. Promat Div., Poor & Co., 851 S. Market St., Dept. PF, Waukegan, Illinois.

143. Electrostatic Painting
No. 2 Process Brochure pictures many on-the-line examples of electro-coating on a wide variety of products. Ransburg Electro-Coating Corp., Indianapolis 7, Indiana.

144. Protect Plated Surfaces
Neotex, an open-mesh neoprene rubber matting protects highly polished surfaces when used to line work benches, conveyor baskets, or any surface where goods are worked on or in transit. Research Products Corp., Dept. 76, Madison 10, Wisconsin.

145. Industrial Ovens
Bulletin 200 pictures complete line of standard and custom-built industrial ovens. W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

146. Touch-Up
Folder describes aerosol-packaged paints for repairing damage that occurs in transit and handling. Sprayon Products, Inc., 2077 E. 65th St., Cleveland 3, Ohio.

147. Plating Course
Data on a correspondence course in electroplating. Joseph B. Kushner Electroplating School, 115 Broad St., Stroudsburg 12F, Pa.

148. Plastisol Coatings
Information on vinyl plastisol coatings formulated for use on materials handling equipment, tumbling barrels, plating equipment, and as electrical insulation. Marathon Metal Products, Inc., 67 Huntington St., Cortland, N. Y.

149. Washing Machine
Bulletin 107 describes the Vibra-Washer, a conveyorized cleaning machine with a vibrating work carrier that aids in removing dirt from recesses and depressions in small parts. Simplicity Engineering Co., Durand 25, Mich.

150. Anodizing Racks
Information on titanium anodizing racks and titanium nuts, bolts, studs, and washers for use in assembly of anodizing racks. Detroit Industrial Process Co., 9301 French Rd., Detroit 13, Mich.

151. Amorphous Coating Base
Information on Metabond, an amorphous coating base for improving the adhesion and corrosion resistance of any paint finish. International Rustproof Corp., 1575 Merwin Ave., Cleveland 13, Ohio.

152. Isophthalic-Based Coatings
Information on the advantageous features of coatings based on Oronite isophthalic acid. Oronite Chemical Co., 200 Bush St., San Francisco, Calif.

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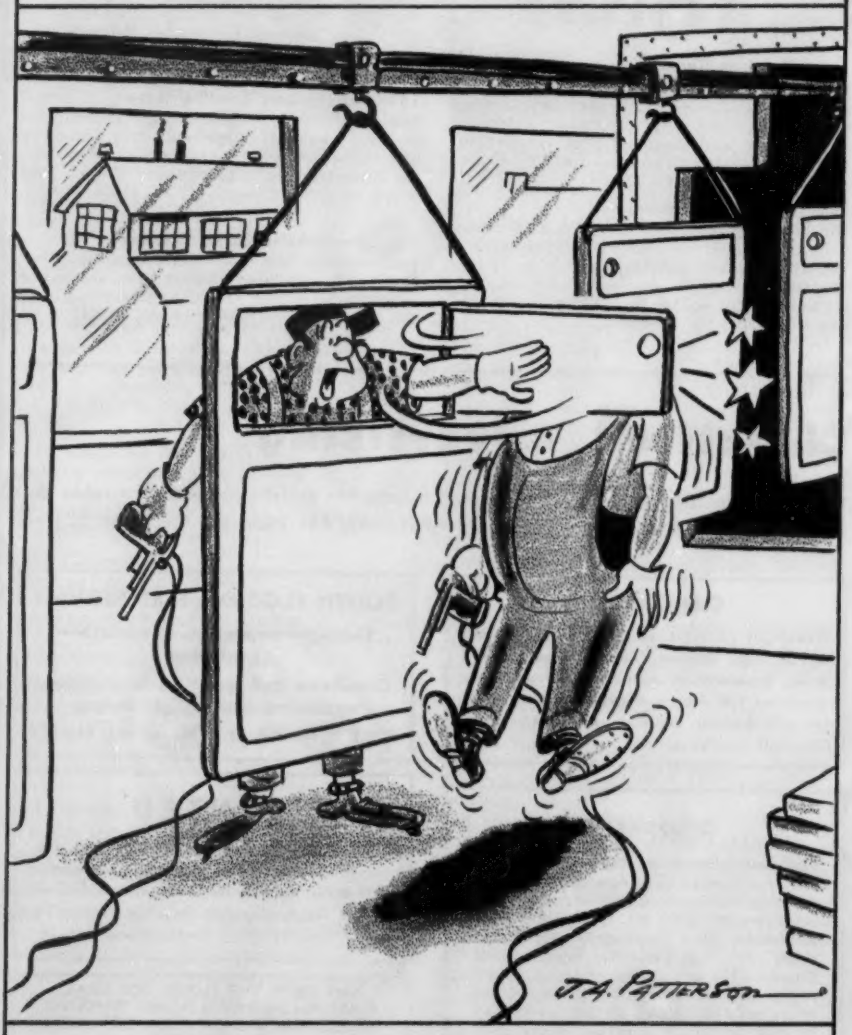
The Finishing Touch

By J. A. Patterson



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Remove all organic and inert film from base metal pores with ANODEX!

You get a bright, smut-free surface ideal for uniform bright deposits with MacDermid's ANODEX. It's the economical, easy-to-use reverse current cleaner for steel and copper that electrocleans better—and does it cheaper than other cleaners.

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MEMO TO MANAGEMENT

INTERPLANT CORRESPONDENCE

Subject: New DETREX Emulsions

From: Supervisor of Quality Control

To: Purchasing Department

We've tested the four new DETREX emulsions thoroughly and they meet every one of our production standards. Not only do they clean better and more safely but they provide excellent rust-proofing as well. Each has high solvency while remaining completely stable in our hard water. Their minimum flash point is 200°F. — well within safety requirements.

In our humidity cabinet tests for corrosion inhibition, panels treated in a 2% solution by volume were still fully protected after 1000 hours! This is more than ten times the resistance shown by other emulsions we have used.

The combination of cleaning ability, rust-proofing, safety, solvency, stability and corrosion resistance has increased our production and lowered our operating costs. Please specify all four DETREX emulsions as standard for our mechanical spray washing operation.

Development of these excellent rust-proofing emulsions is just one more example of DETREX leadership in *all* phases of metal cleaning and processing. Ask your DETREX representative how you can put this experience to work in your operation.

DETREX CHEMICAL INDUSTRIES, INC.

BOX 501, DEPT. A-1002, DETROIT 32, MICH.

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